



Published on the 15th of each Month by

THE INDIA RUBBER PUBLISHING CO.

No. 124 WORLD BUILDING, NEW YORK, U. S. A.

HENRY C. PEARSON, EDITOR.

Vol. 4.

MAY 15, 1891.

No. 2.

SUBSCRIPTIONS: \$3.00 per year, \$1.75 for six months, postpaid, for the United States and Canada. Foreign countries, same price. Special Rates for Clubs of five, ten or more subscribers.

ADVERTISING: Rates will be made known on application.

REMITTANCES: Should always be made by bank draft, Post Office Orders or Express Money orders on New York, payable to THE INDIA RUBBER PUBLISHING COMPANY. Remittances for foreign subscriptions should be sent by International Post order, payable as above.

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Trade supplied by the American News Co. and all its branches.

Entered at New York Post Office as second-class matter.

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Foreign Trade and How to Cultivate It.

AMERICAN merchants are wont to take for granted the impossibility or at least impracticability of extension of trade in foreign countries or districts to which their enterprise has not yet penetrated, when the actual fact is that with better information and prompt action, such trade might easily be secured. This is especially the case in South American countries, as proof of which the following from the *New York Tribune* is put in evidence:

"An American merchant went to Nicaragua not long ago to make a personal investigation of the conditions of trade and the opportunities for selling goods there. At Leon he met a number of leather dealers who were importing stock from Germany. He had been a manufacturer of boots and shoes for a long time in New England, and recognized the stock at a glance as American leather. He asked the dealers what they were paying for it, and was told that the price paid to the German importer was thirty-five cents. He offered at once to sell the same quality of leather for twenty-one cents, received orders from the merchants and filled them. A practical illustration like this is worth a column of argument respecting the possibilities of extending American trade with Spanish-American countries. There were the German merchants ordering American leather from Boston and then shipping it from Hamburg to the west coast of Central America by the Kosmos steamship line and selling it there as German leather. The American leather dealers had considered it impracticable to trade with that coast, and were allowing German rivals to sell New England goods at a large advance upon their own prices."

This point has already been editorially pressed upon the attention of the intelligent readers of THE INDIA RUBBER WORLD. In an article published in our issue for March of the present year, under the title *The Development of Foreign Trade*, we quoted from an address of the Hon. Carl Shurtz some remarks which had a pertinent application to the subject. The necessity of the study of foreign markets and the advantages to German manufacturers gained by such study were therein specified. Such a study is only to be made by personal, careful and intelligent observation through opportunities afforded by travel in and intercourse with the peoples of different lands.

The time will come when the work of the commercial traveller will first be directed not to the end of immediate sales, but to the investigation of the manners, customs and personal habits of the people among which it would be desirable to extend our commerce, and to the careful noting of what they want, where they obtain present supplies and the cost of these supplies, with a view of adapting trade to existing demands, and, collaterally, to the creation of demand for other goods.

Even in this country, the mistake is sometimes made of supposing that goods adapted to use and in active demand in some parts of the country are salable anywhere. Such a mistake was made two or three years since by an Eastern house manufacturing furnaces, stoves and ranges, all of which were fairly well adapted to burning anthracite coal of good quality and, where such fuel is obtainable, meet with a reasonably good share of favor. Many consignments of these goods to parts of the country where softer

and inferior grades of coal can only be had, resulted in their return, with loss of freights in both directions, storage charges, and much damage from breakage.

A similar mistake was made by at least one merchant (probably one of many) in filling a shoe store in a country of ranchmen, with boots and shoes, such as are in active demand elsewhere, that is to say having thick soles and low broad heels. The cowboy whose life is in the saddle, will not wear such foot gear. He wants a high Spanish heel, to prevent getting his foot through the stirrup when his mount happens to be a wild bucking broncho, and, as he walks very little, a heavy sole is an abomination to him.

If then this principle of adaptation be so important in domestic trade, it is plain that its application to the extension of trade abroad must be absolutely imperative. If American manufacturers wish to extend their trade into markets not yet reached and securely held by them, the close study of the exact present wants of these markets must be supplemented by exactly meeting such wants. The gradual modification and improvement of goods may, and probably would follow, but it cannot be abruptly forced.

Present and Future of the American Rubber Export Trade.

IN a great many countries we can successfully compete with the foreigner in manufactured rubber goods, especially where good taste is a consideration. The English make a heavy gum shoe, and the Germans a clumsy clog. Of course they are wedded to their ideas and their goods sell readily at home, but when exported they are placed rigidly upon their merit and American styles hold the trade. One of our largest companies has a branch house in Paris where the light, shapely gossamer article appeals to the intuitive taste of the people. We export largely to Russia, also to Norway and Sweden. We also supply continental Europe, sending goods largely to Constantinople even. We have made little progress with Australia, houses having ventured in that trade generally retiring with a loss they could hardly understand. A large house some time ago sent \$1000 worth of samples to that country, with the usual result, an unmitigated failure. With South Africa it is a little better, carriage cloths and miscellaneous articles going there at times quite freely. China and Japan are large, steady buyers, having agents located in this country to represent their interests. Everything has to be made most accurately for these peoples and a suspicion that an article is a second causes its sure rejection. For a long time it was the custom of exporters to place five extra pairs of shoes in each hundred to meet the contingency of rejections which usually averaged in that proportion. We do a good business in boots and shoes with Canada, not to mention other articles. Manufacturers in other lines, however, succeed to a greater or lesser extent and our own companies have factories in the Dominion, the tariff laws favoring some special lines. Our people have in the past

been very busy in supplying the domestic trade but as overproduction becomes more apparent the export business will receive more attention and there may be some large future developments in that line. The possibilities of this trade are indicated in the statement that England, our greatest possible rival imports \$1,500,000 in rubber manufactures annually.

A large Sale of Cultivated Rubber.

ATON and a half of caoutchouc was recently sold in Amsterdam, Holland, the product of trees that were planted in Java some ten years ago.

The prices obtained were said to be excellent, and possibly the transaction is a forerunner of others that may play an important part in the future commerce of rubber. For a long time Java rubber was sought and used by the porous plaster manufacturers, it being of the sticky sort, but its gathering was carelessly done, and there was so much bark and other substances in it that it was discarded for Pará which is now invariably bought for that purpose. The care needed to cultivate rubber begets the same quality in gathering, and it is well known to our manufacturers that many an inferior rubber would come into favor if it were not so full of rubbish which it requires expensive labor to eliminate. Rubber cultivation is carried on now quite extensively in Assam with a yield of about six and a half pounds to the tree.

Rubber Goods for Sportsmen.

"DOES the sportsman use rubber?" "Yes, rubber boots," says the meagrely informed, satisfied that he has made an exhaustive reply. "Wait a minute, there are one or two items more," said a dealer not long ago, as he glanced around a store full of devices calculated to make a person part with the larger half of the money he had saved for a little outing. Here are some water-proof silk lines; there is some rubber in them and they are stronger and handsomer therefor. Then here are some rubber click-reels with rubber safety bands, some wading pants of a dead grass color, stockings also, soft rubber tumblers, canoe cups, rubber camp blankets, "Surprise" calls in which a rubber globe is manipulated to vary the sound, magnifying glasses in rubber cases, pocket oilers, racket covers, tennis balls, footballs:—But here comes a customer; drop in some rainy day and I will take up the gun, bicycle and camera department with you." When we remembered the time that we bent a pin for a fish-hook and tied it to a piece of twine which dangled from a pole cut on the spot, put worms for bait in our pocket, and then took a survey of the ingenuity of man as displayed in that store, the fact that the world is moving was very impressive. Still, we caught fish in those days; the fish were plenty in the primitive streams and had not yet become acquainted with human beguilements. Besides we had no money to buy them on the way home.

American Capital in Honduras.

THAT Honduras is to be some day an extensive rubber producing country has been frequently predicted. Anything then that can lead to the opening up of that country by American capital will without question further the interests of those who will in the future own the rubber orchards. There has recently been organized in Chicago an immense lumber company to do business in Honduras. The name of the new concern is the Honduras Lumber Company. On the grant of land that this corporation possesses is wood valued at nearly \$8,000,000. The paid-in capital for the working of this concession is \$2,500,000. The officers of the company are C. Sherman Wynn, president; E. W. Perry, vice-president; J. B. Insley, secretary; J. C. Hubbard, treasurer. Among the directors is E. W. Perry, Governor of the Territory of Masquiata in Honduras. As the president of the company recently said:

"We possess the stumpage on 2,000,000 acres of land, with the privilege of working it 25 years without taxation. There is rosewood, ebony, sandalwood, sapodila, mahogany, and numbers of hard woods new to this market. We have 1000 miles of water frontage, 102 miles being on the Atlantic Coast. As there is a heavy duty on all fine furniture shipped to Honduras, we intend to make and sell in that country everything needed in the furniture line, and also supply them with all kinds of lumber. We shall ship everything manufactured, through the Latin American states as far south as Buenos Ayres, and also to the United States and to Europe.

The Death Dealing Amazon.

THE mortality of the rubber districts in Brazil has always been considered large, but of the actual figures few have any conception. Some facts have come to light in a census of the Purús River district, a most important region for the gathering of rubber. It is known that during the past few years enough immigrants have gone there to make a population of 40,000, yet the census reveals the fact that there are now only 16,000 persons remaining. Last year the mortality was very large—it is described as stupendous—and the banks of the Acre River are plentifully strewn with the rude wooden crosses placed over the graves of the victims of fever and disease. When it is considered that this mortality is altogether, or nearly so, among the natives, one could foretell very easily what would become of foreign labor in the period of acclimatization. The immigration into this district is chiefly from Ceará and points contiguous to the rubber forests. There is the remnant of an American colony up the Amazon, of which little is known except that it is in a deplorable condition. It is not, however, engaged in rubber gathering. Although yellow fever exists in these districts to an alarming extent, it is incomparable with the malarial diseases which prevail all the time, but more especially in the rainy season, the advent of the latter being a signal for a general hegira to more healthy places. There seems to be a general evening up in this world which finds a realization in the fact that the American and European seek to protect health with the means which cost all this suffering and death to obtain.

Interesting but "Fishy."

THE imaginative paragrapher finds many chances for his peculiar gift, and many times it is to him remunerative. There is a tendency among them when they run out of material to dip into the rubber field and give some strange facts about the manufacture of rubber or the consolidation of the great companies, and the general public is so ignorant on these things that a contradiction is rarely called for. A story that strikes us as one having a deal of unreality about it is one taken from an old number of a rubber paper that died a peaceful death some years ago. The article is headed "A Rubber Birds' Nest." It reads:

"In the rear of a large rubber manufactory was an orchard, where, undisturbed by the rush of steam from the boilers or the clattering of hammers in the mould room, lived a number of birds. Among them were a pair of orioles. They seemed to care less than their neighbors for the noise, for their graceful nest swung from an apple-tree limb close by the boiler house. Each season they tore down the old nest and erected a new one. It happened one summer that, just as they commenced building, a large quantity of small tubes had been hung upon the racks out-of-doors to bleach in the sun. The birds with the true ingenuity of the golden robin saw at once the superiority of the new cord for building purposes, and forthwith helped themselves. The operatives saw them, but were so much pleased that they did not interfere. In due time the two feathered laborers had taken all that they needed, and the nest was finished. Then it was that the workmen one by one climbed upon the corrugated roof of the boiler house and inspected the nest. It was indeed a curiosity. Three tubes, their ends woven into the mass of string, fibre and hair, were looped over a limb and were the main support of the dainty abode. A fourth was run in and out around the mouth of the nest, forming a binding at once firm and elastic, while in the bottom, under the young ones, was a tiny rubber blanket, made of a scrap of gossamer cloth. After the birds had forsaken their rubber-bound nest, the foreman cut the limb off and took the whole thing home. Whether or not these birds will file a caveat to protect them from infringement by other birds is an open question, but surely the originality of the idea, and, indeed, the beautiful swinging motion of their aerial cradle, gives them the credit of adding one more to the voluminous list of 'new uses for rubber.'"

The author of this article does not say what was the size of the tubing used, but speaks of it as being "small tubes." Why would it not have been possible, nay, even probable, that these tubes being small tubes were what is commonly known as nursing-bottle tubing, and why should not these intelligent orioles have stolen also the nipples from the druggist sundries factory and fitted them onto these tubes from which they made the nest, and arranged to feed the young ones through these nipples and tubes? This, of course, would not be commonly done by golden robins, but birds that were bright enough to swing their nest by rubber tubes and to place "a tiny rubber blanket" under the young ones, ought certainly to appreciate the latest inventions for feeding their young ones.

The story resembles very much those of that American

Munchausen, well known to the daily press, Joe Mulhatton, whom the New York *Sun* has styled the "Monarch of mendacity." Many will remember his marvellous "yarns" written in a matter-of-fact style that took in large numbers of credulous people, as "Monkeys Picking Hemp," "Geese Weeding Cotton," "The Arbor diabolus or Tree that Sucked the Blood of Birds," etc. It is with regret we add that this pleasing and ingenious romancer has apparently gone out of his mind and has been very recently confined in the Detention Hospital for the Insane at Chicago.

Brazilian Reciprocity.

THE Brazilian Minister at Washington is making a very laudable effort to dispel the impression that his government is not acting in good faith in carrying out the provisions of the Reciprocity treaty. The complaint has been, that immediately after the treaty went into effect, the custom officials began to impose a series of petty exactions in the way of increased cost of permits, fines and so on, until it became a question whether the advantages contemplated in the text of the treaty were not completely offset by the additional expenses and trouble caused by the action of the Brazilian custom officials. The government there seems in a transition state, and to have great difficulty in controlling its officials and, as European influence is very potent, it is doubtful whether this evil will be fully removed for some time to come.

A Word on the Weather Strip.

IT is the little things in life that after all make us comfortable, and it is in the manufacture of little things that great fortunes have been made. What particularly incites this reflection is the fact that during the last year there have been more than a score of patents on the subject of weather strips. It is gratifying to know that almost all of these have called for the use of a certain amount of India rubber. Indeed, when we think of it, the old-fashioned flannel or felt strip that used to pack the window casements and the doors, has been entirely superseded by a neat, trim, and effective rubber packing. To-day few well-built houses are without some form of weather strip. Stores, public buildings and manufactories, all use this little comfort lender, and these strips are used to a surprising extent on board ship as a packing in hatchways, not only to make them air-tight, and cold-tight, but watertight. As one of the little unostentatious helps that rubber has been to comfortable living, the weather strip stands pretty nearly at the head.

The Shrinkage of Rubber.

THE shrinkage of rubber after it leaves the forest is generally an unknown quantity; but that it is large, varying with circumstances and conditions is a well accepted fact. During the winter and in a freezing temperature, the loss is not large while it is in the hands of the

factor, as the water in the rubber congeals and does not evaporate into the surrounding atmosphere. In summer, the maximum losses occur. A consignment of Pará coarse which left Brazil last July, had shrunk before the end of October 24 per cent., and at the time of its shipment to the factory, it had reached a further loss, aggregating 30 per cent. in all. Fine Pará from Up River shrinks the least, but Up River coarse will lose about 10 per cent. on the voyage, and Islands still more or 15 per cent. The reduction in volume as well as in weight, is constantly going on in about the same proportions. Other expenses in the handling of rubber are comparatively light, freights insurance, warehousing, etc., comparing very favorably with those expenses in other lines of trade. It is plain that large stocks of rubber on a declining market do not form the most desirable of investments.

The New U. S. Consul at Pará.

WE were favored on the 4th inst. by a call from Mr. James M. Ayers, M.D., recently appointed U. S. Consul to Pará, Brazil. Dr. Ayres called to make the acquaintance of the managers of THE INDIA RUBBER WORLD, as representing more than any other publication in this country the most important export of Pará. He also was desirous of obtaining files of the periodical, as containing information of much importance in his official capacity.

Dr. Ayres impressed us as a genial, well-informed gentleman, capable of fitly representing the U. S. Government at the city to which he has been sent, and whither he proceeded from New York, on the 6th inst. We wish him *bon voyage*.

An Artistic Catalogue.

WE are in receipt of the New Catalogue of the Day Rubber Co., which is a handsome and artistically printed publication. Its price lists with illustrations fitly represent the great progress of the trade since the expiration of the patents of Austin G. Day and Charles Goodyear. The goods carried by this company are of the best quality in their respective and numerous lines, the great variety of which is exemplified in this catalogue.

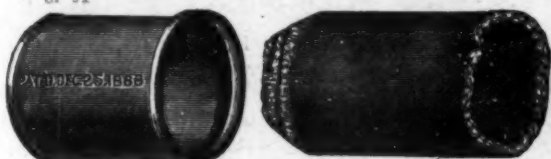
Obituary.

MR. CHARLES HENRY HAYWARD, of Haywardville, Stoneham, near the Melrose line, died from the effects of the grip yesterday. The deceased was 55 years of age, and leaves a widow and three children. He was at one time superintendent of the Red Mills Rubber Company at Melrose, and afterward in business in Melrose and Malden.

GEORGE A. PUTNAM, master mechanic for the Metropolitan Rubber Co. and Electrician for the New York Insulated Wire Co., died at his home in Wallingford, Conn., March 25, of Bright's disease, after a short illness. He was born in Chelsea, Mass., in 1853, and was first employed by the Boston Rubber Co. He afterwards became connected with the Chauncey Rubber Co. until their consolidation with the Metropolitan. He was a man of great sterling qualities and loved by all who knew him. His funeral on Good Friday was attended by the officers and employés of both companies.

THE Meyer Rubber Co., New York, are putting on the market a new shoe called "Carmencita." It is a dainty affair, just the thing to do the fantastic on a damp sidewalk, but is not unfit for more severe service. It has a one-half French heel with a reinforced pointed toe. It is buff lined and is a model of taste and utility. An increased demand is noticed for the heavy booties with both single and double buckles and the "Ajax" felt stocking.

—Poor hose breaks because it is poor, and good hose breaks because it is abused. While therefore breaks are common, a simple means of repairing is almost a necessity. One of the cheapest and simplest forms on the market for repairing gar-



den hose is what is known as the Common Sense Hose Coupling. It needs no elaborate tools for attaching. A common pocket knife sharp enough to skive the end of the hose, is the only appliance needed. The cuts accompanying this show the



method of attaching. The hose after being forced into the coupling engages with the sharp inner curve of the beaded edge, and is held so firmly that it is almost impossible to get it out. Manufactured by H. J. Artle & Co., 96 Dorrance Street, Providence, R. I.

—Rubber has been spread upon paper and proved to be a good substantial waterproofing. It was, however, a trifle too



expensive to use in the sheathing of buildings. The Neponset Water-proof paper is made up of a secret compound which may or may not have rubber as a base, at all events it sheds water as well as rubber, and neither mildews nor cracks. It is to-day in all probability used more extensively than any other paper for building purposes. As the various rubber

stores throughout the country are on the alert for everything in the waterproofing line, this should interest them. Manufactured by Bird & Co., Walpole, Mass.

—A. W. Day, of the Day Rubber Co., St. Louis, was in New York the other day. He reported an excellent business last year, and made large purchases of stock while here and in Boston. We are also indebted to Mr. Day for a call, and an extremely pleasant interview with him at our office.

—A. Straus, of the New York Belting and Packing Co., sails for Europe, May 20th, on the *Fürst Bismarck*. He will visit Germany, France and England, in the interest of the company.

A Proposed New Steamship Line.

A NEW steamship line between the Adriatic ports and those of Brazil is negotiating with the Austrian Government for a subsidy. The new company is to have a capital of 5,500,000 florins, and expects to receive an annual subsidy of 570,000 florins. In subsidies and emigration schemes the Brazilian Government seems to have adopted a conservative policy, which is making a good impression on European capitalists. The report comes from various quarters that the new Government is gaining a good reputation for straightforwardness in meeting its engagements. With such a course continued the hope is expressed that with the immense resources of the country great prosperity will slowly come to it instead of the disaster a short time ago not only feared but expected.

To Increase the Supply of Rubber.

A RESIDENT of the Malay Peninsula, writing to a Ceylon paper, suggests that it might be profitable if those owning properties in Ceylon would scatter broadcast a few bushels of seed of the Ceara rubber tree in the belts or useless jungles adjoining their estates. The Ceara grows rapidly and thrives in jungle, while there is every probability that India rubber will increase in price to a considerable extent. A German syndicate propose to establish a large plantation in Mexico, in part of which the Ule tree flourishes, and an average-sized specimen yields twenty gallons of "milk," equivalent to forty pounds of dried rubber.—*From the English Mechanic.*

—The Hall Rubber Company of Portland, Me., have moved into their new quarters in the building formerly occupied by the Bijou Theatre. The building has been thoroughly remodeled and put into shape to answer the requirements of a first-class store. It has been freshly painted and hard wood furnishings have been put in. The ground floor, covering about 3150 square feet of space, will be entirely devoted to the display of a stock of goods which the proprietors say is the largest and most complete stock of rubber goods to be found in the New England States. The left of the store will be given up to the ladies' department and will be neatly carpeted with costly carpets and amply supplied with full length mirrors. The second floor is given up to manufacturing purposes, and here about seventy machines will be in operation, entirely run by electric power. All the ladies' gossamers will be manufactured here and the plant will employ sixty skilled operatives.

—Mr. Benj. Hamilton, of C. H. Hamilton & Co., Albany, was in the city recently and received the congratulations of his many friends upon his complete recovery from his long and serious illness.

—A Dresden rubber journal gives the very interesting heading: "The English Belly-ache over German Undertakings," to a notice of the reports current in English and American trade journals of the formation of a German rubber syndicate.

—The Gutta Percha and Rubber Manufacturing Company of Toronto, Ont., are the successful bidders for furnishing the city of London, Ont., with fire-hose. The price to be paid is 90 cents per foot, and the amount called for is 1500 feet.

—The Derby Rubber Co., of Shelton, Conn., have added a new turbine wheel to their plant.

The New York Belting & Packing Company, New York. Its Product and Capacity.

THE career of the New York Belting and Packing Company, New York, one of the most widely known manufacturing

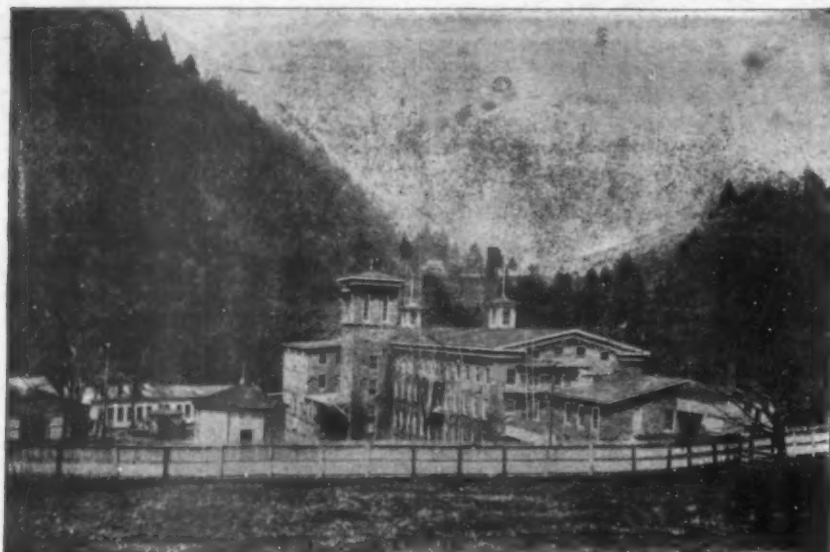
1887 it was also wiped out by fire, and in its stead has risen the solid and substantial brick structure illustrated.

In 1869, still greater manufacturing facilities became necessary. The company's rubber goods were then in universal demand, and in order to get as near as possible to New York, and yet not be in New York, a factory was erected at Passaic, N. J., so that at the present time there are three factories, all of which are model establishments of their kind.

The following data, obtained through the courtesy of Mr. F. Cazenove Jones, the general manager of factories, will convey to the reader a good idea of the present status of this progressive concern and its manufacturing establishments.

The Sandy Hook property upon which factories 1 and 2 are located covers 135 acres. No. 1 is located upon and surrounded by 100 acres of this land. The remaining 35 acres are devoted to No. 2. The two factories are about one-half mile apart.

The company employs in its three establishments 600 hands, of which 350 are at work at Sandy Hook, living very comfortably in cottages adjacent to the factories, and making within themselves a thriving

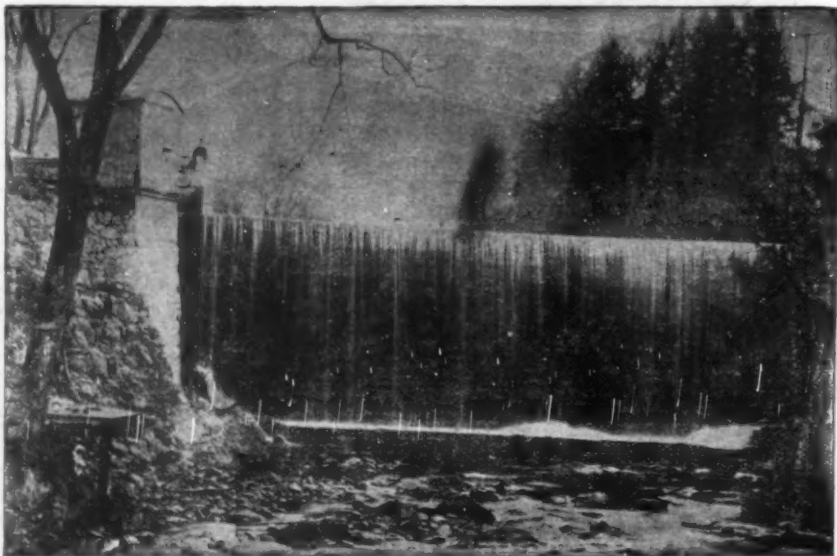


FACTORY NO. 1, NEW YORK BELTING AND PACKING COMPANY, AT SANDY HOOK, CT.

corporations and among the greatest representatives of the rubber industry, is a striking example of American push and the progress of native manufacturing interests during the last fifty years.

The history of vulcanized rubber takes us back to 1846, when the predecessors of the New York Belting and Packing Company commenced business. The company was incorporated in 1856.

Its manufacture, then a limited line of vulcanized rubber specialties on a small scale, was carried on in a factory acquired from the Goodyear Rubber Company, remodeled to suit its needs and located at Sandy Hook, Fairfield County, State of Connecticut, a short distance from the picturesque village of Newtown—a wooden structure and about one-third the size of the present building, which was totally destroyed by fire in September, 1856. In its place is now the building shown. Well started in the manufacture of its rubber fabrics, the superior quality of its vulcanized rubber production soon became generally known. It was not long before the demand necessitated greater manufacturing facilities and on October 14th, 1863, the company purchased what was then known as the Dutch factory, an adjacent business run by Mr. Poppenhusen, a manufacturer of hard rubber goods—principally combs. This factory (No. 2) the New York Belting and Packing Company refitted with new machinery, etc., to suit the manufacture of its specialties. In



WATER POWER NO. 1, NEW YORK BELTING AND PACKING CO., AT SANDY HOOK, CT.

community. Factory No. 1 consists of a main building, built of brick, 200 feet long, 70 feet wide and 4 stories high. From time to time shops and out-buildings have been erected and added to the factory proper. Leffell Turbine water wheels of the most improved design, aggregating 450 h. p., furnish power for running the machinery. The water power is derived from two dams, owned by the company. That of the No. 1 factory, being thirty feet high, with a width of 160 feet.

The main building of factory No. 2 is 200 feet long, 50 feet wide and varies in height from three to five stories. In each

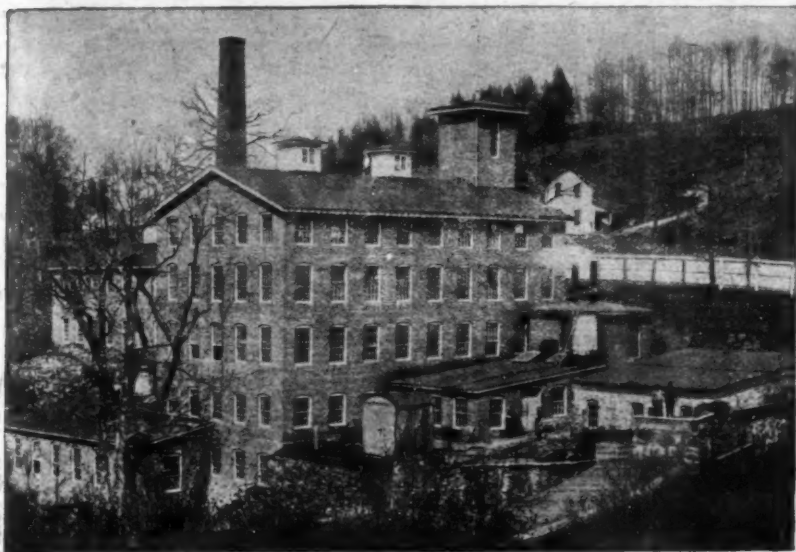
of these factories are Corliss engines which can be used in case the wheels should be temporarily stopped for any cause.

The equipment is very complete, even to the lighting which is done by gas made by their own gas plant. The Passaic factory covers about five acres, including a very convenient

which are machine belting, elevator belts, endless belts, railway and agricultural belts; leading hose, air-brake hose, brewers' hose, cotton hose, hard rubber suction hose, linen hose, suction hose, steam hose, test hose; anti-shaft rattlers, bicycle tires, billiard cushions, enemy wheels, pure cord, gaskets, rings, grain drill tubes, piston packing, pure packing, steam packing, salamanda packing; pure rings, fruit jar rings, wringer rolls, rubber covered rolls for bleacheries, dye and print works; tennis soling, car and wagon springs, tubing, rubber valves of all kinds, corrugated and perforated mats and matting, rubber cement and vulcanite emery wheels.

The demand for these goods is world-wide, and from an obscure concern with one little office in New York City and a small factory at Sandy Hook in 1846, this firm now stands second to none of its kind in the world.

It has extensive warerooms at 15 Park Row, New York City, and branches in all the principal cities of the United States. Lately it has been organized into a joint stock company, a large amount of English capital being absorbed. It is proposed to erect works in England at an early date, when the



FACTORY NO. 2, NEW YORK BELTING AND PACKING COMPANY, AT SANDY HOOK, CT.

dock fronting on the Passaic River. It furnishes employment to 250 of the male populace of Passaic and consists of three main buildings, the largest of which is shown in the engraving and is 375 feet long, 60 feet wide and 3 stories high.

The other main buildings are respectively 300 feet long, 40 to 50 feet wide and 2 stories high, and 320 feet long, 35 feet wide and one story in height.

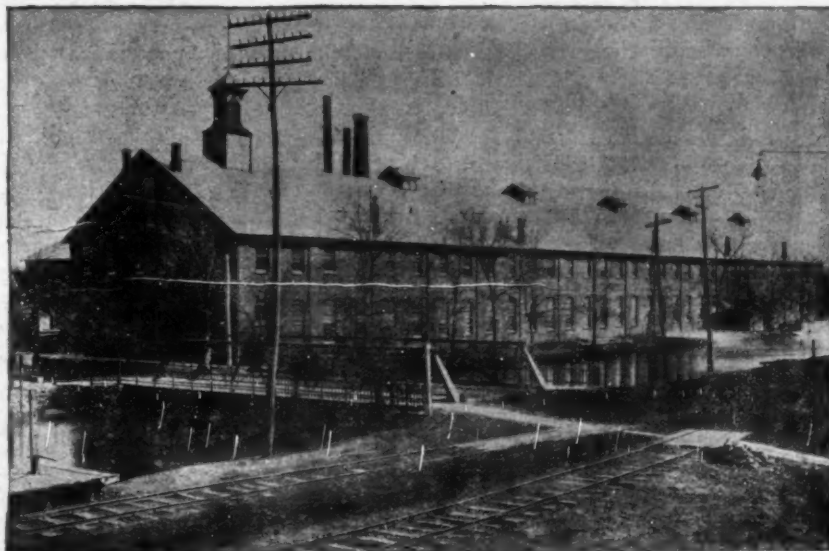
A turbine water wheel of 300 h. p. and a Corliss engine, as a substitute when needed, furnish the power to these factories.

The Passaic factories are lighted by incandescent lamps operated by dynamos of the company, but are also piped with Passaic City gas which may be used in case of need.

All the factories have their special storehouses, boiler houses, engine houses, machine shops and carpenter shops for repairs, etc., each with complete tools and appliances. The factories are all supplied with the latest and most modern plant, the factories are under the charge of general manager of the factories, F. Cazenove Jones, a gentleman of great mechanical knowledge and executive ability, who is in every way well equipped for the important position he occupies.

The total daily output of the company's works, reaches 20,000 pounds of rubber, and frequently more.

This is represented in the various vulcanized rubber goods for mechanical and household purposes, made by them, some of



FACTORY NO. 3, NEW YORK BELTING AND PACKING COMPANY, AT PASSAIC, N. J.

large continental business which is yearly increasing, can be handled by the London house with greater profit and convenience than is now possible.

The American management will continue principally in the hands of Mr. John H. Cheever, with whom Mr. J. D. Cheever and Mr. F. Cazenove Jones will co-operate. These gentlemen have great financial and business experience, and have for a long time handled the affairs of the company with consummate skill and ability.

W. H. W.

The Manufacture of Celluloid.

IF one were briefly to define celluloid it might be called a species of solidified collodion, made by dissolving pyroxyline in camphor by pressure and heat. When wood fibre, or cellulose, is put for a short time in a bath made of a mixture of sulphuric and nitric acids, and is then taken out and washed and dried, it acquires remarkable qualities. To the casual observer there is nothing to show that it is in any way changed, but when tested, it is found to have become very inflammable, and provided the bath has been long and intense it has become a high explosive. Cellulose that is treated this way has been "nitrated," and the product resulting from it is called nitro-cellulose, or pyroxyline, or gun-cotton. It is well known that there are numbers of other substances besides wood fibre that when treated as described acquire similar explosive qualities. Glycerine, sugar and starch may be mentioned as ordinary examples of this. The nitro compound of glycerine is nothing else than that powerful explosive known as nitro-glycerine, which under certain treatment becomes dynamite.

Aside from its explosive qualities, cellulose, through this treatment, acquires another. It is found to be more readily soluble in certain solvents which are without action on ordinary wood fibre. It will, for example, gelatinize and disappear entirely in a mixture of ether and alcohol, forming a thick, transparent liquid.

Photographers use this same material when they take a picture by first spreading a thin film of this solution upon the glass plate. The mixed solvent, being exceedingly volatile, vaporizes quickly, leaving a thin, tenacious, and exceedingly smooth film of gun cotton, which holds the sensitive silver compound used in taking the photograph.

Upon this property of ready solubility it is that the manufacture of celluloid hangs. That gun cotton would dissolve in an alcoholic solution of camphor was first observed by Professor Seeley, and after long and wearisome experiment the Hyatt Brothers patented a procedure whereby camphor with finely comminuted gun cotton is made to exert a solvent effect upon this substance, aided by heat and pressure in confinement to prevent loss of the camphor. Their method was to use a machine like a paper pulp grinder which grinds the gun cotton to a fine pulp in water. Next, the pulp is subjected to heavy pressure in a sieve-like apparatus to extract the most of the moisture. It is then thoroughly mixed with finely powdered gum camphor, one part of camphor to two parts of pulp being used. At this time, if it is wished, any pigment may be added to give the product any desired color. The next step in the process is to give this mass the most powerful pressure in order to drive from it the remaining traces of moisture, and incidentally to bring about a more intimate contact of the pulp and the camphor. This mass is then put into a mould, open at the top, which is fitted with a heavy, solid plunger, when, under a hydraulic press, pressure is applied and the plunger brought to bear upon the mass. While in this condition it is heated by means of a

steam jacket to about 300 degrees Fahrenheit, which melts the camphor, and, volatilization being impossible, the melted camphor dissolves the wood pulp. This heating process is carried on until the product reaches what is known as solidified collodion, or celluloid. When the result is taken from the press it becomes hard and at the same time tough and elastic. The camphor which it contains seems to be combined with it, so that it does not volatilize.

Nearly one hundred patents have been taken out on processes similar to this, but in all of them nearly the same principles are observed. It is often said that aniline colors are used in the coloring of celluloid, but this is a mistake. Only the best, or what is known as permanent colors can be used, as in the case of ivory. Celluloid articles that are to be colored after making up may be treated as follows:

Black; the articles are first soaked in an alkaline lye, then in a weak solution of nitrate of silver, and are dried in the light.

Blue; articles are steeped in a green indigo vat, or they may be plunged in a weak solution of sulphate of indigo which has been nearly neutralized with carbonate of potassium. Another way is to dip the articles into a solution of soluble Prussian blue, or into a weak solution of ferric chloride; dry, and then put them into a solution of ferrocyanide of potassium.

Green; steep the articles in a solution of two parts of acetate of copper and one part of chloride of ammonium.

Yellow; soak the articles in a solution of nitrate of lead for some hours and afterwards in a solution of chromate of potassium.

Brown; steep the articles for several hours in a solution of permanganate of potassium rendered strongly alkaline with soda.

Red; infuse cochineal with water of ammonia, soak the articles for a few minutes in water slightly acidulated with nitric acid, then dip in the cochineal infusion.

Purple; plunge the articles in a weak solution of chloride of gold and afterwards expose to strong light.

Important Decision.

JUDGE LACOMBE, of the United States District Court, decided last month, in a case of an importation of worn-out India rubber boots and shoes, that they were liable to the regular duty of 25 per cent., classifying them as manufactured articles of India rubber.

The importer claimed that he was entitled to enter them at 10 per cent. as rags or waste. Numerous other importations were involved in this suit.

MR. WILLIAM A. MCCOLLIN, a young commercial traveller for the Day Rubber Co., started on a trip through Kentucky and Tennessee about the first of the month. He has been selling the St. Louis trade for some time. This is his third trip on the road. His former trips have been so successful as to give great satisfaction to the company. We shall be glad if this notice affords him some encouragement and assistance in his present trip.

Druggists' Sundries Forty Years Ago.

TALKING with J. F. Doty, of the Atlas Rubber Co., New York, regarding the growth of the "druggists' sundries" business, he said: "The first invention that came into use was the old-fashioned metallic piston syringe, and this held its own until 1851. Of course this was very inconvenient, as its use required the assistance of a second person. An improvement, it is true, had been made in England by Maw, who used an elbow injecting tube, and some manufacturers still make it.

"About the year 1851 two important improvements were brought out, and their manufacture was continued for years, occasioning a great deal of litigation between two progressive and somewhat aggressive rivals of that period, Davidson and Mattson. The first improvement consisted in 1851 of a metallic pump which held a pint of fluid. It was easy in its operation and it has since been introduced all over the world. In 1853 the pocket injecting instrument was brought out, and this had a great run in the South and West. Then in 1855 came the elastic pump syringe, afterwards made with elastic inlet and outlet tubes, introduced into this country by Mattson. Ten years later Lockwood, the assignee of Davidson, commenced his well-known suit against Mattson, the latter holding that the two-tube form was used in Europe in 1852, and Lockwood insisting that the patent of Davidson covered this improvement."

"The termination of this suit must have given Mattson a queer idea of the freaks of the law, for although he had been selling syringes with two elastic tubes everywhere before the issue of the patent to Davidson, the latter gained his case at an outlay, it is said, of \$50,000. The Davidson-Lockwood syringe then had the right of way, which it kept until 1878. Mattson, however, introduced a new form with a rigid inlet tube which we claimed to be superior in many points. This was the battle of the syringes; although it cost a good sum of money it served to extend our trade, and other inventions followed in succession. The breast-pump came along, also fountain syringes, water bags, powder projectors, atomizers, nasal douches, and so on through the whole list."

"When I first went into the business, fourteen years ago, the distribution of these articles to the consumer was rather tortuous, but since then a regular channel has been formed from the manufacturer to the wholesale druggist and so to the retail man. The business since that time has grown immensely and hardly can be calculated. Some idea of it can be formed from the fact that then only three wholesale druggists in New York handled druggists' specialties; now they all do it."

"The old Mattson Company has come down all through this time, being formed into a stock company about ten years ago, and two years ago relinquishing the sundries business to the Atlas Company and confining its attention altogether to dress shields."

"The export business in sundries now is very large, particularly with England, Spain and Mexico. Those countries (and others might be mentioned) have never gotten into our line, although forty years ago Maw was the pioneer in the business."

A Rainy Rubber District.

IT takes rain to make rubber and a great deal of it in some places, but one can hardly realize a country in which fifty feet, or six hundred inches, fall in a single year. Yet such statistics are given from Cherra Poonje, which is at the foot of the Khasi Hills, Assam. One would think that the people would

need all the rubber they gather, rather than to send it to foreign markets.

Rubber Tree Culture in Ceylon.

THERE are some facts of interest in relation to recent experiments in India rubber culture in the annual report of the Director of the Ceylon Botanic Gardens, for 1890, which we insert below, as follows:

CAOUTCHOUC TREES.

Pará Rubber (*Hevea brasiliensis*).—The Forest Department has planted land at Edangoda, in Sabaragamuwa, with 9000 seeds supplied from Henaratgoda at the end of August. They germinated freely, but I understand that some of the land being subsequently flooded, many of the young seedlings were drowned. To supply these vacancies I prepared in October several thousand "stumps" (the seeding time being past), but these, though applied for, were never fetched away. A very small commencement has thus at length been effected in the cultivation by Government of this valuable tree, but it is to be hoped that it will be more vigorously carried onward, and that a very much larger area will be devoted to it, as on a large scale it must prove highly remunerative.

That the yield of rubber is improving as our trees get older, is evinced by a further experiment made at Henaratgoda during the past year by the conductor. The tree selected was the same one as was tapped in 1888, the results of which were recorded in my report for that year. This is now thirteen years old, and its stem girths 4 feet 11 inches at a yard above ground. It was tapped on seventeen days: on seven in January and February, on six in July and August, and on four in November and December. The method followed was to smooth the surface by scraping off a little of the outer bark to a height easily reached, and then to make, with a $\frac{3}{4}$ -inch chisel, numerous V-shaped incisions. At the foot of the trunk cocoa-nut cups were fastened with clay, and the milk conducted into them by little ridges of clay. Most of the milk, however, dried on the tree in tears. The tapping was done in the afternoon and the rubber collected in the morning.

From this tree (which yielded nearly two pounds in 1888) we obtained this year two pounds ten ounces of good dry rubber, partly in sheet but mostly in tears. The tree appears none the worse for the operation and I consider the result very encouraging. The whole cost of collection was under a rupee, and of course in operating on a large number of trees in a plantation this would be very greatly reduced.

Our largest tree of *Hevea* is now 5 feet 9 $\frac{1}{4}$ inches in circumference at a yard from the ground.

Ceara Rubber (*Manihot Glaziovii*).—Interest in this plant has of late years very much died away, the yield of rubber having been found too small to satisfy the planter's expectations. Thus I have made no report on it since 1884. There are, however, considerable plantations on some estates, and now that the trees are older it is found to be profitable to harvest the product. Several shipments have been made to London during the past year, and have realized very good prices. Of course the quantities have not been large: one shipment of 4 cwt. fetched 18 $\frac{1}{2}$ d. to 9 $\frac{1}{2}$ d. per pound net, showing a profit here of about 3.7 cents (of a rupee) per pound. A planter estimates the cost of collection at about 3.6 cents per pound, and reckons that trees of eight years old afford at least three ounces whilst some ten years old gave half a pound. The collection is done in a somewhat primitive way during the dry season, January to March. After the outer flaky layers of bark have been peeled off, the inner bark is pricked copiously; the tears of rubber

which exude are allowed to dry on the tree and are picked off, the resulting product being quite like the "Ceara Scrap" of commerce but in smaller tears.

The present opinion of planters seems to be that this kind of rubber "pays to harvest but not to cultivate," and they are prepared to destroy their trees to get the crop. But even on such a system (which has been also largely followed here with cinchona) extensive areas of bad soil could surely be profitably occupied with this tree, so grown as to provide a crop annually ready for tapping.

Of other caoutchouc trees I have nothing particular to report. *Castilleja* does not answer expectations as to growth; our largest tree now girths only 3 feet 6½ inches.

GUTTA PERCHA.

One of our trees of *Payena Leerii* flowered for the first time in December at Pérádeniya, and finally settled any doubt still felt as to the correct determination of the "Gutta Sundek" of Perak. There is a good figure of this species in Dr. Burck's paper on Gutta Percha in the "Annales" of the Buitenzorg Garden, Vol. V. The trees of this at Henaratgoda are now 25 feet high, and nearly a foot in circumference.

Rubber Gathering on the Amazon.

ALTHOUGH the gathering of rubber in the Amazon districts is mainly carried on by large capitalists having troops of followers who are provided for in anticipation of the results of the season, nevertheless there is a very large business transacted by men who have not the financial resources necessary for large undertakings. These minor merchants are generally Portuguese who settle on the islands in the Amazon, and form an alliance with the natives, who bring to them the rubber in small parcels. Building a small hut at the water's edge the European merchant carries on a barter trade with the surrounding country; the owners of small canoes make frequent journeys to him to dispose of the results of their labors. The plantation owner relies in a great measure on imported labor, which is ever changing; but these squatters, as they would be termed in America, rely altogether on individual effort among the gatherers.

While the business is naturally of a profitable character, it has no allurements for men who prize health more than money. In two seasons the European, if he has not already ceased to exist, turns back again to Pará, weak and emaciated, with his system full of malaria, and makes a desperate effort to save his life. To this end he generally returns to his native land, where if it be possible he regains health, only to return again to the fascinations of the Brazilian forest. And so, like a moth hovering around a candle, he is allured to the certain end, and while his place is filled by another venturesome spirit, nothing long remains to

"Tell where his nameless ashes lie,
Who sought for gold and found it dross."

HUMMING OF TELEGRAPH WIRES PREVENTED.—The humming so noticeable on telegraph wires in some locations is obviated by an invention which interposes a rubber band between the wire and the insulator proper.

ASBESTOS SOAP.—Asbestos soap is coming into use abroad. Its properties are said to be excellent. It is stated to be a perfect cleanser, while it will not scratch the most delicate mirror or reflector.

The Consular Reports for the Rubber Trade.

BY L. OTTO P. MEYER.*

THE consolidation of American and English rubber interests is being brought about through international enterprises, and THE INDIA RUBBER WORLD and the *India Rubber* and *Gutta Percha Journal* are rendering each other mutual assistance in many ways to this end. As is stated in THE INDIA RUBBER WORLD of January 15th, the English government has had its attention called by the London *India Rubber Journal* to the instructions which have been issued by the Government at Washington, ordering its consulates to prepare reports on the rubber industry, which has been done at the instigation of THE INDIA RUBBER WORLD. The London *India Rubber Journal* has further intimated that the American rubber manufacturers have surpassed those of any other nation, and in case they should ever be able to supply the steadily increasing domestic demand, the goods of all other rubber manufacturers would be driven out of the export market.

Curious Surgical Uses of India Rubber.

IN these days when bone grafting and skin grafting have become not only popular fads among surgeons, but have become successful to an extent and for purposes that formerly were not dreamed of, it is interesting to note that India rubber has actually been made to take the place of human flesh. If, therefore, the flesh and the bone may be built up from outside substances, what is the matter with renewing the whole man, and accomplishing anything in the surgery of the future? The organization of rubber within animal tissues is something that a professor in France tells of. It seems in a certain case he had inserted an ordinary drainage tube of vulcanized India rubber, the tube being 1 1-4 inches in length, and 1-5 of an inch in diameter. This tube remained in the wound a number of months, and at the end of this time it was examined with a microscope, and to the surprise of the physician it was found that the substance of the rubber had become truly organized. The end of the tube which was furthest from the surface of the wound had become thoroughly assimilated with the tissue that surrounded it, and had entirely lost its normal shape. The surface of the tube next above this had lost its original appearance and acquired a complex structure, showing fine tissue fibres with cells of a variety of form between them, and a great many capillary blood vessels. A prominent medical journal, speaking of this, says: "When we consider that India rubber is a pure vegetable exudation, it is very remarkable that it can thus become organized. Devoid as it is of all structure, and calculated absolutely to act as a foreign body and to prevent the union of wounded surfaces, it is surprising that it could become an integral part of animal tissue."

Brazilian Exchange.

WHILE the decline in exchange with Brazil may occasion more or less solicitude to those interested in Brazilian commerce it must not be forgotten that it is oftentimes subservient to manipulation for temporary advantage to the exporter in that country. The higher the price of gold, the more milreis it will purchase, and a temporary manipulation of it

* Translated for THE INDIA RUBBER WORLD from the *Gummi Zeitung*.

will oftentimes secure more rubber for the shilling in the outlying districts which of course cannot keep in line so readily as places within reach of daily quotations by telegraph. The whole Amazon district, after one leaves Pará is without telegraphic communication, and as journeys are reckoned by thousands of miles the temptation to manipulation is very strong. Sudden depressions in exchange are not always warranted by the conditions of trade with foreign countries.

East African Rubber.

IN a recent article in the Italian *Esploratore* Emin Pasha places rubber as among the most valuable of the productions of East Africa. Samples of the gum sent to European manufacturers were said to be of good quality save for the presence of water in some of the samples. He states that the negroes will willingly take up the production of rubber if assured of a small reward; and that the extent of the forests gives assurance of a supply for a long while in the future. The largest quantities are now exported from the Mambettu country, though its quality is inferior to that produced in the dry regions of the Dieka country.

Rubber Packing for Manholes.

ATTEMPTS to replace rubber as packing material for manholes, etc., in boilers in Germany by means of cements appears to have met with disfavor in certain official quarters. The chief police inspector of steam engines of Hamburg has contributed an article on the subject to the technical journal *Dampf* in which he states that all attempts to replace rubber by a cement such as was recently recommended by the Magdeburg society of engineers have resulted in damage to both men and machinery.

M. BALLARD has exhibited to the Paris Society for the encouragement of national industry several samples of fabrics rendered entirely waterproof by immersion for fifteen minutes in a solution of aluminium acetate.

Elastics in Congress Gaiters.

THE *Gummi Zeitung* says that the main cause of the deterioration of the elastic in congress gaiters which is so much complained of is the carelessness of dealers in exposing it either to the sun or to artificial heat. Another source of trouble is said to be the use of oil in dressing the shoes, and also the oil sometimes present in the leather itself. As a substitute for oily substances for application to patent leather shoes a mixture of 2 parts of glycerine and 1 part water is recommended. If dealers will bear these facts in mind they may be able to understand the cause of the breaking down of the elastic under the conditions named without charging the manufacturer with carelessness and fraud.

A Nicaraguan Forest.

AN engineer who has been employed on the Nicaragua Canal says of the two coasts: "The vegetation is so dense back of the coast that one is reminded of Stanley's description of the Congo. There are immense trees with dense foliage growing close together, great creepers winding around everything, a labyrinth of underbrush, and moss, damp, thick and slimy, on trees and rocks. This moss sometimes is a foot thick, and a

pole has to be driven through it to strike the solid substance beneath. In this black forest many of the men got lost and didn't return for days. In these forests there are valuable woods in almost innumerable varieties. There is ironwood, mahogany, India rubber, sapadillo, which will last for hundreds of years; wild almond, called break-axe, because it can't be cut with an axe, and many other beautiful woods. The west coast is a beautiful country, with undulating hills, fine farms and pastures, and forests of not the density of the east side."

Rubber Paneling.

A VERY artistic effect has been obtained by India rubber panels or veneers which are very beautiful in color, but unfortunately too costly for general use. In England a very thin gum-elastic has been used as a wall covering, particularly where the walls were exposed to damp. The surface was printed like paper hangings, and in some cases lithographed, and was very beautiful. Another advantage of a covering of gum-elastic vellum was that it could be easily washed with soap and water when it became soiled, and in addition to this was of great durability. In this case also, however, it was found that the process was too expensive to permit of its general use.

HOW TO POLISH HARD RUBBER.

In response to inquiries as to how hard rubber can be polished, the following instructions are given: Use a felt lap charged with the finest grade of pumice stone, mixed with enough lard oil to make a thick paste. Run the lap at a high speed, and, of course, apply the rubber to the side and not to the rim of the lap.

AQUARIUM CEMENT.

Gutta percha, in shreds.....	4 ozs.
Black pitch.....	8 ozs.
Shellac.....	2 drs.

Melt in an iron ladle on a sand bath and stir together. Pour out on a wet slab and roll into sticks similar to "Prout's Elastic Cement."—*Br. & Col. Dr.*

The Gutta Percha Zone.

A STRIP of the globe 750 miles wide comprises the possibilities of the successful growth of the gutta percha tree. In this strip are included the islands of Borneo and Sumatra, Southern India, the Gulf of Oman, from the Red Sea to the Gulf of Guinea in Africa, and Guiana, Venezuela and New Grenada in South America. Gutta percha will grow in a part of New Guinea and the Celebes in the Pacific Ocean. It is doubtful, however, whether the attempt to cultivate the tree in Algeria, will succeed, the climate being too dry and bright. This zone of course is not included between definite parallels, but has curved boundaries dependent upon isothermal lines, altitudes and rainfall, the latter being the most important condition in determining the curvature.

A RUBBER factory for the manufacture of shoes is being built in Sweden. Heretofore the Edinburgh people and the Russian American concern which buys largely in the United States, have furnished the Swede with his goloshes. It is a credit to our manufacturers to know that the reports, coming from that country, are to the effect that great efforts have to be made to rival the superior productions of the countries supplying such goods at the present time.

City Feet on Rainy Days.

THE particular reason for selecting city feet for investigation, rather than those suburban or rural, is the fact that they present a far larger variety and furnish more phases for profitable study. That they should be considered chiefly in connection with rainy days is obvious from the fact that only on a rainy day the foot—particularly the feminine foot—is brought into sufficient prominence to be studied comprehensively and to advantage.

The contemplation of the human foot on a rainy day is necessarily very largely a study of rubbers; because the rubber has become so essential an article of the civilized wardrobe to-day, that a very fair definition of civilized man would be "one who wears rubbers."

There is, however, one person, even in these advanced days of material progress, who does not wear rubbers upon a rainy day. This person is the ultra-Brummelish young man. This young man will array himself in a long flowing mackintosh, and put on a water-proof hat; but for his feet, no matter how wet the day, he thinks the only proper covering is a pair of leather shoes. Somebody has told him that over in England the true "howler" wears no rubbers. So he splashes around in the water all day; at night his shoes are taken off and thrown in the corner where they dry and, after such treatment has been sufficiently repeated, crack from heel to toe.

This idea of walking through water without a pair of rubbers seems to have its fundamental reason in the young man's desire to publish to the world his ability to buy new shoes for every rainy day. But as these youths soon grow wiser and wear rubbers, or else get pneumonia and disappear entirely from the range of human vision, they are essentially a short-lived and limited class and need no extended discussion.

There is another person—and this word is used advisedly, because he certainly is a "person" in the most sarcastic significance of the word—who is particularly conspicuous on a rainy day; and that is the man who toes in. This practice gives a peculiar appearance to the rubber; one that is singularly grotesque and pleasing to the observer with an eye to the humorous; but which can hardly be said to add to the dignity of the wearer—supposing for one solitary moment that any one who toes in could be possessed of dignity. The constant twist of the foot in its semicircular movement toward the inside gradually throws the sole of the rubber up over the outer edge of the foot; so that the wearer is in a short time literally walking upon his uppers; while a large part of the sole of the overshoe has reached up over his small toes and is gradually climbing towards the instep.

This is a state of things, however, relished not a little by dealers in rubbers, because they know that this particular kind of wear is very disastrous to the longevity of the shoe; and that the man of this centripetal swing to his foot consumes a larger number of rubbers in a year than his compatriot who toes out squarely like a Christian and keeps the sole of his rubber under the sole of his shoe.

A spectacle which stares one in the face at every turn in wet weather is that of a man slumping along with his rubbers half on. This man is usually a girl; for men, as a rule, when they wear rubbers at all, want them on their feet. But a great many young women, either by reason of haste in preparing themselves for the street or because of the peculiar construction of their heels, or perhaps by reason of having purchased rubbers two sizes smaller than their shoes, walk around with their rubbers firmly on at the toe but barely caught at the heel, so that with every step they take the heel shuts down like a gentleman's opera hat or a Japanese lantern. This is a very distress-

ing spectacle, and greatly mars the landscape upon a rainy day to any close and fastidious observer. But here again the rubber man is much rejoiced; for he is well aware that the heel of the rubber was not intended to stand this continual compression; and that it will sooner or later revolt, and that a new rubber will have to be provided to take its place.

There is no day like a rainy day to bring to the surface the thrift of the human mind; hundreds of men with the mark of intelligence upon their faces may be seen going along a frequented thoroughfare on the rainiest and sloppiest of days wearing rubbers in which there are large holes, variously shaped, but always ragged at the edges. It is fairly obvious that a rubber with a hole in it is inexpressibly worse than no rubber at all; for the hole serves only to let in the water, none of which by any possibility effects its exit by the same means; so that a large volume of water is taken in and given free play upon one's feet, and offered every advantage for saturating shoes, stockings, and all that may be within. It needs but one experience to prove to any man that a rubber with holes is the wettest possible thing he can get around his feet; and yet, even in the light of several such experiences, so thrifty is the average human being that he will continue to wear these disintegrated overshoes, even in the vilest weather. The left rubber may have a hole as large as a dollar; but, argues the owner, "that right rubber is still good; I can get considerable wear out of it yet." In order, therefore, to economize on the right, which with its mate could easily be replaced for a dollar or so, he will utterly ruin his left shoe, belonging to a pair probably costing nine or ten dollars—to say nothing of jeopardizing his future comfort and his very existence, which in some cases is worth even more than a \$9 pair of shoes.

The thrift of these people is on a parallel with that of the man in a story already presented to the public who took a pair of shoes to a cobbler to have them repaired. Said the cobbler: "I don't exactly see how I can do anything with these shoes; the soles are all gone, and the uppers are all worn out." "Yes, I know," replied the other, "but it seems a pity to throw them away; the strings are still in excellent condition."

An hour's studious observation of feet on a recent rainy day disclosed to me incidentally, and yet in a way more or less directly connected with this topic, the marvellous resources of the juvenile masculine mind. Two boys stood in a secluded doorway, busily watching the passers-by. Ever and anon one of them would dodge out, walk closely up behind a man who, to the honor of the conspirators was generally an able-bodied gentleman, and getting close to him would, as opportunity offered, lightly step his toe upon the little rubber spur to be found at the heel of his victim's rubber. All well-regulated rubbers, it is generally known, have at the heel a small projection by which the toe of one foot is enabled to depress the heel of the other rubber, and thus remove it without the use of the hand. Upon this the urchin would deftly and adroitly step. Off of course would come the rubber—sometimes entirely off, sometimes only half off—but in every case the wearer would be thrown into a state of great confusion, especially if the rubber dropped off entirely, and he took several unprotected steps in the mud before noticing his condition. By the time the unfortunate pedestrian had regained his self-possession and his overshoe, and had opportunity to look around for the cause of his mischance, the small boy was safely ensconced in his doorway, on the lookout for another victim. Boys who pursue this sport should receive from rubber men all the encouragement consistent with religious belief, for the sufferer frequently blasphemously refuses to return for his lagging overshoe, which means the speedy purchase of another pair. J. P. LYONS.

Current Gleanings.

BY LIGHTNING ARRESTER.

SOME pioneer work is being done by the Minneapolis Street Railway Company in placing all the mains, feeders and track feeders underground, the only wire in sight overhead being the trolley wire itself. A regular conduit has been constructed between the tracks for the reception of the wires. The construction of the conduit is extremely novel. It consists of a wooden trough made of two inch planking specially prepared with fernoline to withstand decay; this trough is built in sections of 400 feet, the man-holes being placed that distance apart. In the trough are laid paper tubes of the class manufactured by the Interior Conduit Company, the tubes being kept apart by means of projecting collars placed about two feet apart; the tubes do not rest on the bottom of the box but are supported on cross pieces of short lengths of tubing. The tube is made in lengths of ten feet and the jointing is done by means of sleeves and water-proof cement. When all the tubes are in place the trough is filled up with melted pitch and the cover nailed on; the conduit is then complete. The man-holes are of wood treated similarly to that used for the trough. They are made in two compartments, the space between the inner and the outer being filled up with pitch, the inner compartment or box being thus well insulated. The ends of the tubes project into the inner compartment of each man-hole.

The most interesting feature of this system is that uncovered copper cables are drawn into the ducts, the insulation of the paper-pitch-wood combination being relied on entirely. Very heavy conductors have been drawn in in lengths of as much as 1500 feet and with smaller conductors no great difficulty has been found in drawing in lengths of from 3000 to 5000 feet. A large amount of the conduit has been in operation, it is stated, since the 1st of October last without any trouble having been encountered in working. It is estimated that as much as 250 miles of uncovered copper cable are now resting in the conduits, and the *Western Electrician* states that the insulation resistance on the entire amount of tubing is 35,000 ohms. If these figures apply to a length of 250 miles, and the natural inference is that they do, they cannot be accepted without question. That would mean that the insulation resistance of the conduit is 8.75 megohms per mile, and it is scarcely credible that paper, pitch and wood can give such high results. In any case the experiment is a bold one and it will be interesting to see if the conduits stand the test of time. It would not be very surprising if before long the company found it necessary to withdraw their bare copper cables and have them insulated with some material partaking of the nature of a rubber compound.

The Interior Conduit Company has brought out a new style of tube covered with metal, the idea being that such a tube could be used with decorative effect as a substitute for moulding, where exposed work is required either from necessity or choice. The metal covered tube is generally made double, the ordinary paper tubes being drawn through a die, and an outer covering of either brass or iron drawn upon them and fastened by lapping the seam. The tubes can be highly polished and finished in any color and it is expected that they will be largely used for exposed work. The same company has also lately introduced what is styled a "standard twin conductor." This consists substantially of a concentric insulated conductor being made up by insulating a strand of wires and then lapping around the insulation another set of wires of equal number,

and applying an insulating covering over this. To form the outer conductor the wires are wound around the insulation of the inner in a flat band, the wires being close together, but the lay of the spiral is so long that of course it does not form an even winding under the outer covering of insulation. This makes a bad job mechanically and it is difficult to see where the special advantage of this style of concentric conductor comes in. The claims made for it are that it costs less than two separately insulated wires of like quality and capacity, and that it can be placed in smaller compass than any other double conductor or any two separately insulated wires.

The necessity of properly insulating the tools used by workmen who have to deal with high-tension currents, or rather with the wires that conduct them, is daily becoming more widely recognized. The men themselves know this well enough and frequently apply the insulation on their own account by slipping pieces of rubber tubing over the handles of their pliers or by winding insulating tape over them. There has lately been placed on the market a useful little article designed to obviate the necessity for any such haphazard makeshifts. This is a rubber plier handle or sleeve, closed at one end; moulded from good rubber stock especially for this purpose. The sleeve fits the handles of the pliers snugly leaving no part unprotected, and gives the hand a better grip on the pliers. The sleeves are made in various sizes to fit the different sizes of pliers used by electrical workmen. They are already in use in different central stations and should be in all.

The submarine cable factory at Calais, France, recently referred to in these columns, has just been inaugurated with great ceremony. A large party of visitors went down from Paris to inspect the works and a lunch was given on board the cable steamer *Westmeath*, which was about to set sail on an expedition to the West Indies and Brazil. About 300 workmen are employed at the Calais factory, and it is stated that sufficient orders have already been received to keep the factory busy for several years, with a monthly output of 560 knots of cable. It sounds as though there might be a slight exaggeration here, as 6000 knots of cable a year for "several" years means rather a large amount of cable. Moreover it is not usual to place orders for submarine cables many years ahead, as when they are wanted they are generally wanted at once, that is allowing a reasonable period of time for manufacture.

Mr. David Brooks, the veteran electrician of Philadelphia, calls attention, in a recent communication to the *Electrical Engineer*, to the properties of rosin oil as an insulator for high tension currents. Mr. Brooks many years ago took out patents on a system of underground conductors insulated by means of oil. The conductors were simply covered with cotton, cabled or bunched together, and drawn into an iron pipe, oil being forced in a sufficient quantity to fill up the pipes. One of the principal difficulties is to keep the oil in the pipe. This was especially the case at first when paraffin oil was used, but with rosin oil less trouble is experienced in this respect. When the rosin oil is heated so as to drive out any moisture that it may have absorbed, its insulating properties are greatly increased, and the distillers are able to make an oil that is far heavier than water or even heavier than sulphuric acid. One of the great advantages of oil insulation is that it is almost impossible to spark through it, and if sparking does take place there is no permanent puncture because the oil is "self-sealing."

The following remarks of Mr. Brooks are worth quoting:

"Now, I beg the reader to consider what advantage there is in having an insulation that is heavier than water and is not penetrated by it, or does not absorb it. How many hundreds of dollars' worth of gutta percha or rubber insulated conductors have failed during the past ten years on account of access of moisture to the conductors? Not immediately, but in time, the insulation disintegrates and decays, becomes spongy, or contains fissures. The first oil insulated cable that was laid for practical use on my system was in London, in 1880, eleven years ago. I then used paraffin oil, and they had trouble in keeping it in the pipes. As soon as I found out the virtues of rosin oil I sent them a number of barrels of it, and since that was introduced they have had no trouble." And yet in spite of the virtues of oil and the frailties of gutta percha and rubber, most people seem to prefer to put their money into the latter materials rather than into the former.

The Rubber Web of Sixty Years Ago.

WHEN the rubber business was in its infancy, and when its few crude processes were as carefully guarded as if life and death depended upon their secrecy, a communication like the following must have aroused a deal of interest. Although the time has long gone by when anything of value to the manufacturer can come from a description like this, it is still of interest, and will doubtless lead a few of the pioneers back to the days of "Auld Lang Syne" when rubber was rubber, and the best Pará sold for twelve cents a pound with few bidders at that.

Gentlemen: The general employment of gum elastic web, induces me to send you for publication, a brief notice of the processes for its manufacture, indulging the idea that it may prove of sufficient interest to amuse, or perhaps instruct some of the many readers of the journal who are seeking for information.

Circumstances, which need not be related, enabled me to see in detail all that is noted in the following pages, at the manufactory, at St. Denis, near Paris, which, if I am not mistaken, is the only establishment in France, and which has a branch in London, both of which are usually kept impenetrably secret. The fabric was commenced at Vienna but much improved and extended in the manufactory at St. Denis, in which there are about 1500 of the machines for plaiting the thread around the filaments of Gum, and all the other departments in correspondent proportions.

No pledge was given, nor will any breach of confidence result from the publication of these notes, which were written immediately after the visit to the establishment in 1834. Such as they are, they are at your service, with the best wishes of

Your obedient servant,

FRANKLIN PEALE.

1st Operation.—The gum elastic is provided in the usual form of bottles. The first operation is to divide these bottles into two equal parts; they are then placed in files of six or eight in height and of an indefinite number in extent, upon a plank and another plank is placed upon them, when the two are drawn together by wooden screws and nuts. They remain in this state a sufficient time to render them flat, or to take out in a great measure the original curvature of the bottles.

2d Operation.—The first machine contains a circular knife which revolves rapidly, its diameter being about 8 inches. At the side of its edge is an advancing carriage or slide, which receives its movement by means of a screw from the shaft of the knife. Upon this slide is attached the gum, a hole being made

in its centre to receive a screw, which serves as a pivot upon which it may turn; it is held down by a nut that is screwed upon it, and the edges are held down by springs placed near to the knife, but not so strong as to prevent its turning under them. A box under the table contains water, in which the knife runs, and a box above it encloses the blade and prevents the water from being thrown into the face of the workman. When the machine is started, the gum advances and is turned round by hand, whilst the knife cuts off the irregular circumference, until a continuous slip comes off, which the workman takes hold of and draws away, the carriage advancing and the knife cutting until the gum is exhausted. The operation resembles the cutting of leather strings out of circular pieces of that material in the manner practised in the olden times by shoemakers.

3d Operation.—These slips pass into a bucket of water, from which they are taken and examined through their whole length by a woman who removes the defective parts and joins together the ends of the slips, by cutting them off in a sloping direction and making a nick near the extremities, with a pair of scissors. These ends are then placed together and hammered with some force upon an anvil, by which means they are made to adhere with considerable tenacity.

4th Operation.—These slips thus joined pass to another engine, which resembles in almost all respects the slitting mills of iron works, of a size proportionate to the material upon which they operate. The slip, always contained in water, is guided into this cutting mill, which has five or six blades according to the width of the slip, and is kept in its place and prevented from turning by a slight spring. After passing between the cutters, is drawn off by two rollers, between which it passes, and from thence into the hands of the attendant who passes the slip, thus divided into threads, into water.

5th Operation.—The filaments are then passed into the hands of females, who examine them through their whole extent, remove the imperfect parts and join the extremities as before.

6th Operation.—The next machine is important, having for its object to remove the elasticity of the gum, or in other words to stretch the filaments to their utmost extent. It consists of a reel of eighteen or twenty inches in diameter, revolving with considerable rapidity. Between the attendant and the reel is a wheel with several grooves of different diameters, revolving with a movement slow compared to that of the reel, and which has a transverse movement from the right to the left side, thus serving as a guide to the filament, and preventing it from overlapping upon the reel. This latter wheel was evidently intended to give an equal tension to the gum as it was wound upon the reel, but I observed that the filament was simply held by the hand, and the wheel only used as a guide; sufficient practice on the part of the workman giving to the motion every desirable regularity. The slips are left upon these reels to dry and harden for a period varying from three to six weeks.

7th Operation.—They are then wound upon bobbins by the usual means of a wheel and spindle, by a woman, care being taken to retain the tension.

8th Operation.—The next operation is the plaiting of silk, cotton, thread or other material, around the filament of gum, previously colored or white, according to the objects into which it is subsequently to be manufactured. This is performed by an extremely ingenious machine, the construction of which it would be impossible to illustrate without drawings; the machines are manufactured in Paris. They have the important quality of stopping if a thread breaks or is exhausted.

9th Operation.—The machine last alluded to draws the filament off the bobbins upon which it was previously wound, and

after plaiting around it winds it again upon others, which, when filled, are conveyed to the looms, and there placed in frames, with a strap and counter-weight to give the necessary tension, and in sufficient number to form the warp of the web, which of course varies in width according to the object to which it is destined. The looms are usually simple and moved by hand, but there are also looms capable of weaving six webs or more at the same time, the shuttles of which are furnished with racks by means of which they are carried through the chain.

The plaited filament is combined with silk or other matter, and filled with different materials according to the objects of the manufacturer, and in this respect, all the variety of the weaver's art may be exercised.

All the operations thus far noticed have been performed by machinery, driven by a steam engine, with the exception of the looms, which it appears to me are not necessarily excepted. In most of them the gum has been deprived of its elasticity, the last operation consists in restoring this quality. This is effected by taking advantage of that well-known though extraordinary character which gum elastic possesses, of shrinking by the application of heat.

10th Operation.—The machine to effect this is a long table covered with coarse cloth or felting in several thicknesses; at each end is a shaft passing from one side to the other, upon which are pulleys,—a strap passes over these pulleys, connecting the two ends of the table by a band, which has upon it a crotch. One of the shafts is furnished with a handle to give motion to the whole. A heavy, square, smooth iron, heated to a convenient degree, is drawn by means of these straps from end to end. Three or four webs are laid upon the table at one time, their extremities on the right are held by weights, whilst a light block lies upon them at the other extremity, keeping them flat, but not preventing their advancing as they shrink by the application of the heat of the iron. Inclined planes near the ends lift off the weight at the close of the operation. The iron has wooden handles for convenient management. Baskets at one end and boxes at the other, receive and supply the web.

The web shrinks in length as the heated iron passes over it, to about two-thirds of the previous length, and has all its original elasticity restored. This operation closes the process, the web being subsequently prepared for sale by being made into rolls and properly packed.

Voltit.

A NEW NON-CONDUCTOR FOR TELEGRAPHY.*

VOLTIT is the name applied to a new composition formed of specially prepared gelatine, rosin oil, oxidized linseed oil, rosin and paraffin. This composition, which is cheap and contains no sulphur, is made after the following formula: 1000 parts of glue obtained from scraps of kid skins, 150 parts of rosin and 250 parts of paraffin. The glue is prepared by soaking the scraps of kid skins in water over night, and on the following day washing them repeatedly in water and until the latter remains perfectly clear. Then 1000 parts of water are put in an iron kettle and 5 parts of carbonate of soda, and also 250 parts of dry kid are added and boiled for six hours, from time to time adding water to maintain the original volume. This mass is afterwards poured through a sieve, through which also steam is constantly passed to prevent the coagulation of the gelatine. The solution so prepared is run into a wooden vessel, and exposed to a stream of warm air for from 50 to 60 minutes. The sediment remaining after each manipulation,

should be boiled for three hours in water and then filtered. The water in which this mass is boiled can be again used to dissolve the glue for another batch, in which case only 200 parts of kid scraps instead of 250 will be necessary.

The filtered gelatine mass is then again put in the kettle and mixed with elaine (such as is used in candle factories) in the following proportion: 1000 parts of the gelatine mass, and 80 parts of elaine. The mixture is now boiled for half an hour, and then 10 parts of caustic soda solution (50 parts water) are added. The boiling is then continued for an hour, so that the elaine will be saponified, and a soapy mass formed to which the prepared gelatine, the rosin oil, oxidized linseed oil, rosin and paraffin are added in the proportions indicated above.

The whole mixture is then boiled for four or five hours after which a homogeneous mass has been formed, which has the property of insulating telegraph wires.

Another Proposed Substitute for Gutta Percha.

A SUBSTITUTE for gutta percha or rubber as a surgical dressing has been placed on the market by a London firm, under the name of "christia" and according to Dieterich (*Pharm. Centralhalle*) the substitute has attained a very large sale, both in England and on the Continent, considering the short time that it has been on the market. Christia is said by the makers to be composed of hemp fibres so treated and manipulated as to become impervious to both water and alcohol. "Fibrine-christia" differs from christia only in the substitution of silk for hemp as a basis. Dieterich procured samples of both and announces as a result of his investigations that instead of Manila hemp the threads of christia are of wood fibre (apparently a sulphite wood pulp), and that it is not impervious to either water or alcohol which passed through it by osmosis. The coating given the fibre he states to be chrome-gelatin with glycerine, an article precisely like the original being produced by dissolving 30 parts of gelatin or glue in water, by the aid of a gentle heat, adding 30 parts of glycerine and finally 3 parts of finely pulverized bichromate of potassium.

Para Rubber Trees Planted in Gaboon.

THE experiment station at Libreville in French Gaboon, has succeeded in obtaining a much better rubber from rubber trees imported from Pará than from the indigenous trees. About 15,000 young plants have been distributed among the inhabitants, and during the next two years it is proposed to deliver some 200,000 plants.

THE capital of the new companies incorporated in Brazil during the past twelve months is equal to \$250,000,000, or the value of four coffee crops, equal to eight times the value of the year's supply of rubber. There will be something of a shower when events pass the critical point.

RUBBER IN MINERAL OIL.—A German chemist has examined a sample of a mineral oil, thought to be of Russian origin, which contained, it is said, a notable quantity of rubber.

DANCE ON THE WAVES.—"Do you have rubbers for stormy weather?" the sailboat asked the schooner.

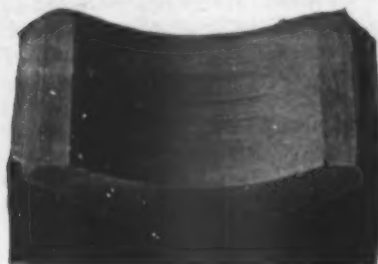
"No, but I get out my pumps," was the reply.

A SUCCESSFUL NEW YORK JOKE.—When a pair of overshoes fall on the floor it is a case of gum drops.—*New York Morning Journal.*

* Translated from *Gummi Zeitung* for THE INDIA RUBBER WORLD.

Relative Qualities of Anti-Friction Metals.

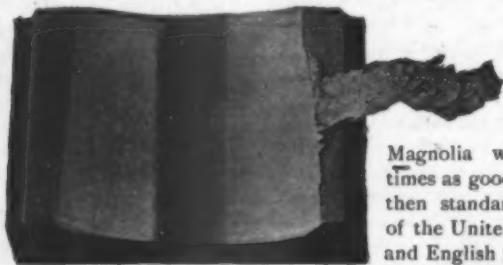
IT is a well-known fact that in the use of machinery, a great deal of power—which implies money—is wasted by the use of inferior anti-friction metal. Much attention is given to this subject by mechanical experts. Governments are very careful



MAGNOLIA METAL.

Ran 30 minutes with 5000 lbs. per square inch in perfect running order.

to obtain accurate tests of metals used for bearings. The record of the Magnolia Anti-Friction Metal is one in which its manufacturers may well take great pride. The Navy Department of the United States made, in 1888, some comparative tests in which it was found that Parsons' White Brass (which had justly ranked high among anti-friction metals hitherto produced and was by many engineers esteemed as the very best metal for the bearings of shafts running at high speeds, or subjected to heavy pressure in proportion to their projected areas) had a coefficient of friction more than three times as great as the Magnolia metal. Parsons' White Brass increased in temperature four times as much, and the summary of the record was that the



DEOXIDIZED GENUINE BABBITT.

Ran 15 minutes with 1000 lbs per square inch.

Magnolia was four times as good as the then standard metal of the United States and English navies. At this test an attempt was made to compare a number of metals by running the machine continuously seven hours. Only the Magnolia metal and Parsons' White Brass withstood this extreme test, the former rising in temperature from 86° to 117° F., and the latter from 94° to 146°. Other excellent metals were tried, but after successive and persistent trials, were abandoned on account of the excessive heating of the bearings. As a result of these tests the United States Navy Department recommended the metal and adopted it for use.

The German government officials say, sententiously, that their continuous orders are sufficient evidence of their entire satisfaction with it.



POST'S ZERO METAL.

Ran 10 minutes with 1200 lbs. per square inch.

ing, says that, in the use of the Magnolia metal in this and the

other engines, he has never had any trouble from heating, or otherwise, and that in his twenty-eight years' experience he has never found its equal for anti-friction and wearing qualities.

From the Blochairn Works, Glasgow, it is reported that it will last between five and six times as long as former phosphor bronze bearings. The reported results of many other tests form a consensus of opinion that it is much superior to Babbitt or Gun Metal, and can be subjected to a pressure so intense that other metals, under like conditions, would be fired or melted.

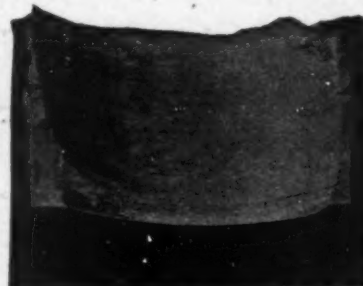
Probably a test made in New York City by Herbert Gray Torrey, the United States Assayer, and a well known mechanical expert, is as interesting as any that can be cited. The metals tested were the Magnolia, Hoyt's Genuine Babbitt, Deoxidized Genuine Babbitt, Parsons' White Brass and Merchant's Iridium Metal, Post's Zero and others. The tests were made with a five inch collar, keyed on a three inch shaft, lubricated with sperm oil. The speed was 1600 revolutions per minute with a gradually increased pressure. Deoxidized Babbitt melted at the end of 15 minutes with a pressure of 1000 pounds per square inch, Hoyt's Genuine Babbitt under the same pressure melted at the end of five minutes, Parsons' White Brass melted at the end of thirty minutes with 800 pounds pressure. Merchant's Iridium Metal melted in thirty-six minutes when subjected to 800 lbs. pressure. At the end of ninety minutes with 1000 pounds pressure the Magnolia Metal was not even abraded. Of course, high speeds and heavy pressures are severe tests, but engineers will at once see the economical significance of these results for lower pressures and speeds.



HOYT'S GENUINE BABBITT.

Ran 5 minutes with 1,000 lbs. per square inch.

The Magnolia Anti-Friction Metal Company has principal offices at New York, Chicago, Berlin, Prague, Marseilles, Genoa and St. Petersburg, with innumerable distributing agencies. Several cuts presented herewith, photographed from the original test blocks of metals which were selected as being the best of their class, show the effects upon them of the tests described.



EMPIRE GENUINE BABBITT METAL.

Ran 34 minutes with 1000 lbs. per square inch; would not stand 1200 lbs.

Granulated Cork as a Rubber Adulterant.

UNDER a compound known as Kamptulicon an English inventor years ago advocated the use of granulated cork as an adulterant for rubber; since then many companies have tried it, and a few still use it. Indeed, so much interest was taken in this not many years ago that a company was formed for the purpose of making goods en-

tirely of cork and rubber. A prospectus which this company issued at that time contains so interesting an account of the uses and supposed advantages of granulated cork in rubber that an extract from it will make a readable article, which is our excuse for the following:

"Owing to the high price of rubber, which is likely to be enhanced by the continuous and ever-increasing demand for rubber products, it is a continually growing problem how to adulterate the pure gum so as to bring the products within the reach of the million, and at the same time have some lasting qualities; to this end minerals of all descriptions are used which in addition to adding great weight destroy in a short time what little rubber there may be in the compound.

"For many years numerous experiments have been made with cork, but until the present without success.

"The advantages of cork as an adulterant are manifold.

"It is in itself *elastic*, and under proper conditions will combine readily with rubber.

"It is *soft* and consequently gives on pressure being applied.

"It is *light*, and large quantities can be used without making the goods heavy; as a fact the more cork used, unless compounded under great pressure, the lighter the product.

"It is *cheap*. The whole of the cork used is the waste of cork-cutting establishments, and in many instances they are glad to pay for its removal, hence the raw material costs nothing (or less), the only expense being the carriage and grinding to the necessary size.

"In addition to being able to compete successfully as against general rubber goods it does the same as against cork. For instance, a life-preserver may be made from this material at a less cost than from block cork, and at the same time be entirely water-proof, whereas after twenty-four hours' immersion the ordinary standard becomes worthless.

"This compound opens an entirely new field, being a substance which is for many purposes superior to rubber. With it a compound can be made as hard as iron, being at the same time very light—or far softer than can be made by any other means—and being a vegetable substance will never harden as all compounds containing mineral substances will do."

The Labor Element in Rubber Gathering.

THE element of labor very naturally is the prime factor in rubber gathering, and its cheapness is an important element. The Panama Canal was projected, and when work commenced, the export of rubber from the Isthmus immediately decreased, labor not being remunerated sufficiently in the forests to prevent the partial abandonment of that industry. Again, the Nicaragua Canal was started and labor flocked to it, deserting the rubber tracts, and we find very little coming from that source. In Guatemala the trees have been overtapped. In Mexico wages are held too high to compete successfully with the miserably paid labor of Equatorial districts.

Going along to Pará we find labor there in a variable shape. The gatherer has fairly to be forced into the business by his wants of food and drink. Ceara grows some rubber, and there is a population that sometimes goes to Pará, but it is only tempted there by semi-starvation at home. In all these countries the gathering of coffee is better paid.

In Africa the labor is handled very carefully, or nothing is obtained from it. The native who can go out of his hut in the morning and gather anywhere a watermelon—the fruit of the country—break it in two, and sit on one half while he eats the other, is not liable to suffer much from the pangs

of hunger, and as his clothing comprises very little more than a string of beads, there is not much incentive to gather rubber for the benefit of civilization. Money cannot be used, and barter is the only medium of trade, and this fact increases the difficulty in securing a supply. The difficulties vary everywhere, but they are all potent in countries where great international works are being carried on, and are of an effect to very materially lessen the supplies from that particular locality.

The Revolt in Assam.

THE native revolt in Assam, coming as it does at this season of the year, may have an important effect upon European markets and incidentally upon our own. The imports of Assam rubber to England have grown rapidly for several years until within the past two years. European statistics are confusing and leave much to individual analysis and speculation, but the Assam crop can be put at nearly 2,000,000 pounds, and next to the product of Brazil in importance as regards furnishing supplies to the English and Continental markets. While the quality of this rubber does not take a high rank (partly on account of its careless gathering and shipment) the province from which it is exported has for years been a favorite spot for botanical experts to recommend for the cultivation of the caoutchouc tree. The soil of the country is nothing but a rich diluvial and alluvial deposit, and the climate has the almost unbearable temperature of 100° in the shade. The rainfall is heavy, and the season proper extends from March to October. The milk is prepared by boiling in water till coalescence takes place, after which it is dried in the sun and then washed with lime. It is full of bark, clay and sand, which is very detrimental to its use. It is exported in baskets. A peculiarity of the trade is that the province of Assam imports rubber from distant points beyond into that section.

Cultivation of Gutta Percha in Algeria. Florida a Possible Habitat.

THE cultivation of the Gutta Percha tree in Algeria is to be begun by extensive planting of the trees under the fostering care of the French Government. The high price of gutta percha has restricted demand very materially, and at the present moment it is debated whether the article cannot be dispensed with to a great extent in the manufacture of deep sea cable. There is an earnest wish that the necessity for its use could be overcome, which may in course of time have its effect. Engineers are already discussing the question in England, and more or less inclining to the affirmative side. In a few years, we have seen hard rubber substituted for gutta percha in a countless variety of articles. The extreme cost of gutta percha is undoubtedly due to the wholesale destruction of the trees in the gutta percha districts. They are simply cut down to get the gum, and as a single tree only yields a few pounds of the product, the resulting destruction can readily be comprehended. It is now said that the supply is pretty well exhausted, and the only relief that can come will be in the way of systematic cultivation. As it takes a tree twenty-five years or more to reach a bearing period, private enterprise will be slow to assume the task. By the way, Florida has the same isotherm as Algeria, a fact that might be borne in mind by some one in the line of succession of our Jerry Rusk.

THE woman with a wet gossamer always gets a seat from the man she stands near in street cars.

The Making of Oil Cloth.

THE INDIA RUBBER WORLD has commented already upon the mixing and calendering of linoleum as being a process similar to the mixing and calendering of compounds for mechanical goods. A like similarity exists between the manufacture of ordinary floor or table oil cloth and the manufacture of rubber clothing. The *American Analyst* gives a description of the manufacture of oil cloth which is so complete that we add nothing to it, but give it as it is printed:

"The body of oil cloth is what is called burlaps, made of jute and imported from Scotland. This coarsely woven fabric is limp, and is stiffened by being passed through a mixture of starch and glue and over hot rollers, coming out, it might be said, laundered. It is then ready for the paint machine, where it is given the body. There are four qualities of oil cloth, depending on the number of body coats of paint. That which is to be the best quality receives five or six coats; the poorer grades, a less number. The cloth, in pieces twenty-five yards long by two yards wide, is dried in racks which are constructed in tiers of twenty. The factory has a rack capacity of 11,000 square yards. The thickness of each coat of paint is governed by a steel knife, in manipulating which a workman becomes so proficient that he can tell nearly to the pound what a piece of cloth will weigh when the coating process is completed. Three men at a paint machine can turn out in a day one hundred pieces containing fifty square yards each. The operation of coating the first quality cloth occupies a week, as each coat requires twenty-four hours in which to dry. It is then sent to the rubbing machine, where surfaces coated with glue and sand pass rapidly over the side which is to be printed, ridding it of all irregularities. The better qualities are afterward given another coat of paint, when they are ready for the printers. This is the most interesting part of the operation. For every color in the pattern to be transferred to the oil cloth there must be a block. These blocks come from Maine. They are about two inches thick, two feet square, and are composed of several layers of wood. The surface to be used is of maple, crossed and recrossed by narrow grooves, which form a surface of small squares, 144 of them to the square inch. Those squares look like, and are in reality, so many pegs. Where the pattern is desired to show, the pegs are left standing, those on the portion of the surface which is not to be printed from being cut away.

"The styles in pattern change twice a year. Some are designed in Utica, and others come from Philadelphia and New York. Some patterns containing many colors require from twenty-five to thirty blocks, and consequently that number of impressions, to reproduce the design. Rug patterns are the most difficult to make, as it requires different blocks for the corners, sides, and the centre. The printing is done on the top floor, so that the oil cloth can hang for a distance of fifty feet to dry. Each printer has a table with eight pads, on which he smears his colors. Pressing a block to the pad containing the required color, he transfers it to the surface of the cloth, using hand pressure only. Having done this with every block, as each transfers but one color, and consequently but a small portion of the complete design, he has finished about four feet square of printing, and goes about repeating the operation on another portion of cloth, and so on. Two men generally work at a table, and can turn out from 100 to 150 square yards of oil-cloth a day, when printing seven or eight color patterns. The paint used is similar to the ordinary house paint.

"When the printing is completed, another block is pressed on, which gives the embossed surface, of which there are two

kinds, pin and line finish. The wet cloth then hangs from the loft for a week, when by an ingenious mechanism it is transferred to the drying room, where for another week it remains in a temperature of 130 degrees. The door to this dry room is fifty feet high, allowing that length of oilcloth to be passed through without rolling or bending. Coming out, it is varnished, three men with the aid of a machine, varnishing 6000 yards a day. Next it is trimmed and the cloth is ready to be shipped."

A Rubber Factory in Spain.

MESSRS. CHARLES MACINTOSH & CO., in addition to their extensive works in Manchester, England, and their branch houses in various countries, have established a factory at Barcelona, for supplying their trade in Spain and some of the adjacent States. The establishment comprises workshops, warehouses, offices and salesrooms. Of course the stock kept for sale embraces many articles from the British works, but the larger share is made in Barcelona, with a view to meeting the tastes of the people of the South of Europe. Agents of the company operate at Madrid, Bilbao, Saragossa, Seville and other cities in Spain, besides going into the south of France and Italy. Rubber goods have thus been brought of late to the notice of many people to whom they are a complete novelty.

A New Rubber Tire.

THE wheel world has been treated for the past season to a vast amount of debate and literature about the pneumatic and suction tires. William Richwine, of Philadelphia, has patented an improvement on the pneumatic tire, which consists of a tire formed of a tube and elastic balls seated in an elastic bed in the tube, and thereby prevented from displacement, the combined action of the parts producing a highly elastic, easy riding, and durable tire. The balls are held in position within the tube. Access is had to them for removal or other purposes by loosening the lacing and separating the tube.

The tire proper is of suitable fabric, such as rubber cloth, which is bent into shape and has its edges brought together at the inner periphery and retained in closed position by means of lacings which are passed around stubs or pins. A bed of rubber or other elastic material is provided with pockets or depressions, in which is seated the rubber balls, which are arranged side by side and are solid or hollow, as desired. A rim or plate of metal or other rigid material within the tube has interposed between it and the balls a strip of felt or other fabric or soft material forming a cushion, and preventing contact of balls and rim.

ONLY satisfactory reports have come across the Atlantic of the progress of the International Okonite Co., Limited. A recent statement by the secretary of the company concludes thus: "The new factory at Newton Heath, Manchester, is rapidly progressing, and the costly machinery is nearly all ready for delivery. When this addition to the existing works comes to be fully developed, the directors confidently anticipate a satisfactory increase in the English business."

FIRST DRUMMER.—"I heard you were travelling for a rubber house."

SECOND DRUMMER.—"Yes; I'm on the home stretch now."—*Art in Advertising.*

SOMETHING of a gum game. The Rubber Trust.

Emigration to Brazil.

EMIGRATION to Brazil has been checked by the cessation of the subsidy heretofore given by the Brazilian government to the German line of steamers for conveying the poorer classes of Russia and Poland to that country. These emigrants were substantially taken free, and the abrupt cessation has been fraught with distress to such of these poor people as have lately made the journey to Bremen, only to be turned back and stranded in German cities. This emigration was stimulated by most unscrupulous methods, and was of such character as to bring to the surface great evils, which led to the withdrawal of the subsidy.

ANOTHER hydrocarbon, which may work itself into favor some time, is mineral caoutchouc. It is elastic, fusible, and resembles bitumen. It has been found in Castleton, in Derbyshire, England, at Montrelais in France, and in the United States.

A SUBSTANCE allied to ozokerite has been found in Utah. It is an insulator, and can be readily worked when slightly heated. A company is being formed to work this product from which much is expected.

Recent Rubber Patents.

No. 446,922.—Fire-proof Paint; Isaac L. Merrell, San Francisco, Cal. A composition consisting of aluminum, asbestos, soapstone, silicate of soda, magnesia, mica, fire-proof clay, lime-water, and a cohesive liquid, such as glue in solution, with or without suitable coloring matter.

No. 446,968.—Corset; Edward C. Foster, Ludington, Mich. A corset having front and rear steels and an elastic band along its entire lower edge, the front steels terminating at the band and the rear steels extending across the band to its lower edge, and a vertically-disposed stay located between front and rear steels and extending across the band.

No. 447,091.—Overshoe; William F. Wahl, Atlantic City, N. J. A heel retainer for overshoes, the same consisting of a strip applied to the interior of the shoe at both sides and extending across the heel, said strip being secured to the sides of the shoe at its front edges and to the upper portion of the heel at its upper edge, and having a depending unattached elastic portion adapted to expand into the heel portion of the shoe.

No. 447,164.—Toy; Sadie F. Simpson, Saxonville, Mass. A toy consisting of separate teething rings, a hollow handle interposed between and uniting said rings, and a rattling device in the hollow handle.

No. 447,395.—Bicycle Pedal; William O. Worth, Cedar Rapids, Iowa. An elastic foot-pad for bicycles, incasing the frame of the pedal on the sides and outer end and having a central enlargement on the outer end, whereby the pedal is cushioned against sudden jars due to falling and the like.

No. 447,410.—Syringe; Lyman D. McIntosh, Ravenswood, Ill. A combination in a syringe of a head having discharge-holes, a supply stem or tube united to the head, a stem having eduction-holes and connected with the head around the stem or tube and of a less length than the stem or tube, the eduction space between the stems or tubes and receiving plug closing at one end around the stem for substantially the purposes specified.

No. 447,480.—Vulcanizing Apparatus; Arthur H. Stoddard,

Boston, Mass. In combination with a vulcanizer-flask and its cover, a threaded post centrally secured upon the cover, a nut adapted to be screwed up or down the post, a sleeve surrounding the post and so secured to the nut as to rise and fall but not revolve therewith, a plurality of locking-levers pivotally secured to the sleeve, and posts or abutments attached to the vulcanizer-flask and slotted.

No. 447,497.—Rubber Boot; William R. Smith, Exeter, N. H. A rubber sole provided internally with an elastic metallic strengthening-wire, said wire being embedded horizontally in the sole near the edge and conforming substantially to the outline of the edge whereby strength and rigidity are imparted thereto without destroying its elasticity.

No. 447,564.—Overshoe; Henry Egle, Toledo, Ohio, in an overshoe the combination, with the heel portion, of a series of open elastic loops extending normally at right angles to the heel portion and adapted to engage frictionally with the boot proper of the wearer.

No. 447,574.—Syringe-Tube Sinkers; Dennis B. Martin, New Haven, Conn. A sinker for syringes consisting of a tubular body made from elastic flexible India rubber adapted at one end for attachment to the inlet-tube of the syringe, and at its opposite end constructed with a loop made of the same material and integral with the body.

No. 447,684.—Valve Handle; John B. Heighington and William Heighington, Toronto, Canada. The combination of a metallic disk having a corrugated flanged edge, with an annular ring of rubber having a corrugated channel formed to fit the corrugated flanged edge of the disk for non-conducting purposes.

No. 447,695.—Anti-Snoring Bandage; Anton Mosterts, Strasbourg, Germany. An anti-snoring device consisting of a hollow cushion adapted to be inflated, having a concave front conforming to the shape of the neck, with an approximately level top portion adapted to support the chin, and fastening means for holding the cushion in position beneath the chin.

No. 448,650.—Whip; Frank Grant, Westfield, Mass. A whip having a central core, a layer of rubber of uniform thickness adherent to the central core and vulcanized thereon, and a covering of braid over the said rubber.

No. 441,743.—Electric Heater for Dental Vulcanizers; Jeremiah O'Meara, New York, N. Y. The combination of a dental vulcanizer having a steam generator, a surrounding incombustible jacket, and an electric heating coil placed around said jacket with an electric conductor, a plug to which it is attached, and leading-in or supply-circuit wires provided with a socket with which the plug may be engaged.

No. 448,793.—Wheel-Tire; William E. Bartlett, Edinburgh, Scotland. A wheel having a vulcanized India rubber tire of cylindrical form when free and without joint after vulcanization, and held upon the wheel in a form trough-like in section, and there retained by inwardly-inclined flanges upon the wheel.

No. 448,878.—Game Apparatus; Samuel W. Clarke, Wood's Holl, Mass. A game apparatus consisting of an elastic ball having a hollow stem secured to it and having wings secured in said stem and supported by spring wires, and a bat or racket for driving the winged ball.

No. 449,033.—Swinging Hose Reel; William F. Bowers, San Francisco, Cal. In a swinging-hose reel, a fixed bearing,

in combination with the reel-carrying bracket and the pivotal connection between them, consisting of the hollow head of the bracket, the gudgeon on one end journaled in one end of the bearing, the fixed water pipe fitted in the other end of the bearing, and extended into and forming the journal for the other end of the bracket-head and on which said head turns, and the collars and intervening washers on said pipe within the bracket-head.

Reissue No. 11,153.—Wheel-Tire for Cycles; John B. Dunlop, Belfast, Ireland. A wheel-tire for cycles and other vehicles, consisting of a hollow expansible tube, in combination with a non-expansible strengthening and confining cover, of canvas or the like, and in an outer or bearing surface of India rubber.

No. 450,999.—Belting; George P. Dodge, Great Neck, N. Y., assignor to the Mineralized Rubber Company, of New York. An improved article of manufacture of flexible belting composed of woven or fibrous material having an exterior coating of elastic material formed on the gripping-face of the belt into transverse parallel flutings; also a flexible woven or fibrous driving-belt having an exterior coating of rubber smooth and plain on one side and provided with transverse parallel fluting on the other side.

Against the Sweating System.

THE sweating system so extensively practiced in England in all lines of clothing, and one that has already been commented upon as something that the rubber clothing people have had to meet, although not practiced in this country, might in time, be started here as other lines of clothing have gone into it. The State of Massachusetts, however, is likely to be free from this curse if its present legislation can effect the desired result. In behalf of certain labor organizations, the following bill has been offered before the Legislature in Massachusetts:

Section 1. Every private house, room or place which, though used as a dwelling is also used for the purpose of carrying on any work or trade or for purposes of gain in, or incidental to any process of making, altering or repairing, finishing or adapting for sale any article of clothing as "ready-made clothing" shall within the meaning of this act be deemed a workshop; and such place shall be kept in a cleanly state and shall be subject to the provisions of this section; and every such article shall be subject to the inspection or examination of any inspector of factories and public buildings, for the purpose of ascertaining whether or not it is in a cleanly condition and free from vermin and every matter of an infectious and contagious nature; and every person so occupying or having the control of such private houses, room or place, shall within fourteen days notify the chief of the District Police or the inspector of factories and public buildings in the district where such place is located, stating the name of the occupier, the location of the place, the nature of the work and the number therein employed.

Sec. 2. Whoever shall sell or expose for sale any ready-made men's or boys' clothes shall have affixed to each garment a tag or label not less than two inches in length and one inch in width, upon which shall be legibly inscribed the name of the person, firm or corporation that made up the garment, and the city where such garment was made.

Sec. 3. No person, firm or corporation shall sell or expose for sale any men's or boys' ready-made clothes, when said gar-

ments or any of them have been made up or worked upon in any room occupied by any person ill with contagious or infectious disease, or in any room which contained less than 200 cubic feet of air space for each person occupying it, or in any room in any dwelling house occupied by two or more families, except when said garments have been made or worked solely by the members of one of said families.

Sec. 4. Whosoever shall expose for sale any one of said garments without a tag or label, or with a tag or label in any particular false or fraudulent, or shall wilfully remove, alter or destroy any such tag or label when exposed for sale, shall forfeit for each offense not less than \$50 nor more than \$100.

Sec. 5. Whosoever shall violate any of the provisions of this act shall forfeit for each offense not less than \$50 nor more than \$100, one-half of which penalty shall be paid to the person making the complaint.

A Valuable Improvement in Fire Hose.

IN no country have fire departments reached the degree of excellence that they have in the United States. Every moment at the beginning of a fire is precious, and every appliance that gives the fireman a better chance for getting the first stream upon the fire, or of keeping the stream more perfectly under control is of unquestioned value. A system known as the Crosby Electric Hose Signal has lately been perfected, largely through the experiments of James Bennett Forsyth, in which an electric button pressed by the hose man sends a current through a wire bedded in the hose and signals the engineer for whatever is needed at the seat of the fire.

The wires employed to convey the electric current are entirely removed from the water way, and are concealed either in the hose itself or between the jackets. The electric couplings are composed of metal and can be attached to any thread or clutch coupling now in use. The coupling of the hose makes the electric contact automatically so that there is nothing for the firemen to do beyond what is usually required of them. The entire appliance needs but very little care to keep it in perfect working order, and the signal may be operated by any one.

The methods now employed for starting and stopping the engine are to pass the word for water when it is needed, either by word of mouth or by ringing a hand gong, but this primitive plan is almost invariably attended with delay. Nor is this to be wondered at when the excitement and confusion incident to such events are taken into consideration. The crowds of bystanders hinder the messenger, the noise creates a liability to error in giving orders, and it is not an unfrequent occurrence to have minutes elapse after the word has been passed for the stream of water before it is obtained. The same disadvantage arises when a greater or less pressure is required or when a length of hose bursts. The loss of time in the latter instance is particularly serious, for when an engine is passing from 300 to 900 gallons of water a minute, any delay in checking this unnecessary flow results in heavy damage.

The men are enabled to carry a line of empty hose to any part of the building easily and quickly, and if a stream is needed the pressure of an electric button on the pipe will signal for water instantly and without the possibility of a mistake. From actual fire experience it has been found that water can be had in ten or fifteen seconds after giving the order, and this, too, without any of the men leaving the line. Should a greater or less pressure be required by a simple code of signals, information can be instantly transmitted by the officer in charge of the line, to the engineer at the engine, and should there be a burst

in a length of hose, the fact being at once discovered at the pipe, an instantaneous signal checks the damaging flow of water, with no delay in notifying the engineer.

Indeed by prearranged signals the officer is in direct control of the engine, even though he may be at the top of a ten story building or in a smoky cellar, many hundred feet away from his machine.

In connection with the shut-off nozzle the pressure may be taken from the hose, thereby reducing the liability of bursting, and at the same time the line is full of water, ready for instant use. There is another valuable feature in connection with the use of the electric hose, and that is the safety of the firemen. The men are sometimes called upon to go into places where they may encounter sudden danger, but with the Electric Hose Signal they can call a stream of water in a few seconds, or if need be, summon assistance.

Among the Rubber Gatherers of Honduras.

A NEWSPAPER correspondent who has spent some time in Honduras among the rubber gatherers furnishes the following gossip account of their every-day life:

"Would you like to know how the rubber for the gossamers and the gums, which keep from you some of the raw wetness and the mud of a Northern winter, was drawn from the trees and changed by natural magic from creamy milk to toughest and most elastic of substances?"

"But we do know, already. We've read how natives in damp and dismal forests of South America collect the milk, dip a paddle into it and hold it in the smoke to dry."

"But there are different ways of gathering and treating rubber, as there are different kinds of rubber trees and widely different qualities of the gum. For some things only the best of all rubber can be used. It comes from Pará, a province of the brand new Republic of Brazil, and is gathered and prepared for market much as you have read. But there are rubbers so hard, so dirty and so inelastic that they can be used only in the poorest classes of goods, or in articles in which elasticity is not an important quality. Some of the worst comes from Africa, some quite good is brought from the far East, and considerable quantities are sent to us from forests only a week's ride from New York or Boston. I lately spent some weeks with the uleros of one of the five Central American republics, whose representatives were lately so feasted and flattered. Some curious customs are to be seen among the rubber men in the wilds of Honduras.

"At sunrise, which is about 6 o'clock throughout the whole year, the ulero eats breakfast, if indeed he happens to get any, and starts for the field of his day's work. This may be over the hills and far away, if his camp has been long established. He is clad in a pair of pantaloons, a blouse and a cap, all of cotton, and all stiffened and blackened by the sticky rubber milk by which they have been spattered, little by little. On his feet are the meanest swindles made by conscienceless shoemakers since the days of the great Rebellion."

"At his side the ulero carries a pouch holding a few tortillas, a tomale or other food; or he may carry in the bag only the ammunition he depends on for killing his dinner, and sometimes more for the larder in camp. If he does not kill a monkey, a wild pig or a paven or two, he can find plenty of sapotes or other wild fruits to satisfy his appetite.

"A coil of rope hangs loosely about the neck of the ulero, and over one shoulder hangs a pair of such iron climbers as you may see linemen using in ascending telegraph poles. In one

hand is the sheet-iron fraud from Europe which passes for a shotgun, and in his other hand he bears his machete, that ever-ready servant, friend and protector, without which no wise Honduranian ever goes far into the forest.

"Little heed does the man give to the beauties of the cool, dusk woods. To him there is no charm in the lofty guanacastis holding high their delicate fern-like leaves; giant Spanish cedars, grand old mahoganies, mottled rosewoods and graceful palm royals have for him no beauties. But the slender trunk of the hule—spelled 'hule,' and pronounced 'ooly' in Spanish—holds his attention completely the instant his eye catches its pearly-gray, smooth bole, or its clusters of five light green leaves, very different from the thick, glossy, magnolia-like foliage of the rubber plants one sees potted in the North. Nor need the ulero go far in the forests of the Cuyumel or the Uampu to find such trees.

"Before beginning operations on his tree the man cuts a few lengths of cariso bamboo, in which to catch the milk as it falls from the simple spout he will fix in the side of the tree; or it may be he will dig a hole in the earth close to the base of the hule and catch the milk in that. Then the rope he carries is passed around his waist and the bole to form a loose loop. Having cut two notches which nearly encircle the tree and meet to form a point on the side nearest him, the rubber gatherer sticks a bit of leaf into the junction so formed, and the spout is made. With a dexterous flirt he throws the loop of rope up, braces back in it and walks up a step, makes another V-shaped notch and repeats the operation until the branches are reached.

"By the time the topmost cut is made, the others are bleeding profusely, and a creamy stream is filling the bamboo. When this is nearly full it is corked by a wad of leaves, and set aside to wait until others have caught all the milk that will flow from this cutting. Later, the tree will be cut again in like manner, and will be killed by the second operation.

"After gathering the sap from a number of trees the ulero digs a hole in the ground with his ever-ready machete. Then he pounds to shred between two stones a few pieces of the vine used for coagulating the milk, washes the bruised fibres thoroughly in a panful of water, and wrings out all he can of the juice. With this he sprinkles the sides and bottom of the pit he dug, then pours into it the milk from the joints of cariso. When all is in he adds to the white fluid the greenish washings of the vine, and stirs the whole with his hand.

"Almost instantly the contents of the pit become a spongy mass, easily compressible and exceedingly elastic. Lifting the sponge from its bed, he squeezes from it the now brown juice, and it is ready to go to market. Squeeze as the most honest of all uleros may, considerable fluid will remain in the many cells which form in the sheet. Regard for truth compels the admission that the rubber will be promptly put to soak in the stream beside the camp, and kept in the water until time comes for turning it over to the trader. The ulero vainly imagines that his gains are thus increased. At times the native adds to the milk of the hule the sap of the tuno. When freshly made the sheet does not show this adulteration, but exposure to air hardens the gum and it loses elasticity. Sometimes the weight is increased by the addition of sand or earth to the milk as it is becoming mixed with the juice of the bahuco; and the trader, guileless victim, seldom deducts more than two pounds, or perhaps three, for every pound of foreign matter. It has been charged against the traders that they have long made it their custom to deduct a liberal allowance from the weight of all rubber brought to them, so that they may be quite sure to take enough.

"When the milk ceases to flow, each cut in the bark is coated by a thin film which dries in the course of a few days. The ulero then climbs the tree again, and strips this baruche from the gashes and winds it into a roll. As it is usually free from adulteration the baruche is considered to be the best of the rubber crop.

"About once in three months the ulero cuts a number of lengths of a slender white-barked tree, usually hollow, and as light as cork. Of these he makes a raft, on which he stows his rubber. Over the cargo is a platform supported by sticks stuck into the logs. Food, bedding and clothing are piled on the platform that they may be well above any accidental wetting; or, if the ulero is rich, he may carry his rubber and other belongings in a pipanti, which is a shovel-nosed canoe of great carrying capacity, and beautifully adapted to ascending rapids.

"A few days of floating or of spasmodic paddling with the current, of happy yelling and singing, of feasting on the plantains, bananas and pine-apples that may be found growing wild on the banks of the river, and the long-wished-for camp comes in sight. The next day the rubber is weighed, the value allowed for it entered on the trader's books, and the long-deferred drunk begins gloriously. A week or so of this tasting of the delights of paradise, and the credit side of the account is exhausted, if there was any credit balance, which is seldom. Then the trader refuses to sell more rum and commands the ulero to prepare for another three months in the wilderness. The trader furnishes an outfit of cheapest of clothing, a supply of food, perhaps an accordion, and to reward for all her lonesome toil the woman who kept camp and cooked food, caught fish and dressed game, lugged fuel and paddled canoes, and faithfully did such other unconsidered trifles as belong to woman's sphere, there may be a bit of calico, a string of beads or a bright handkerchief. And the trader may remember to charge full prices for all these things against the account of the poor beggar, who will be practically a slave so long as that account stands unpaid. The ulero turns the prow of his canoe up stream, but now there is no song; no joyous shouts bid defiance to fate, no jolly feastings enliven the day; but, instead, there is sullen striving once more against the currents that will set adversely for this poor fellow until his bones find rest in the depths of those mysterious wilds, thick-strewn with relics of an unrecorded and long-forgotten civilization."

To Cultivate the Rubber Tree in Mexico.

MEXICO is to be invaded by another syndicate, this one German. Carl von Bulow, who is journeying from Berlin to the republic across the Rio Grande, the *avant* courier of this syndicate told the following story of the enterprise and its purposes:

"It is simply to cultivate the rubber tree," he said. "That is the object of the company. The price of India rubber is constantly advancing. The supply is not equal to the demand. In the island of Ceylon, where considerable is grown, they are turning their attention to cultivating the jungles, or rather making use of the jungles. The Ceara tree grows very rapidly from the seed and thrives in the jungles, and in a few years the supply from Ceylon will be double what it is at present.

"But while this is being done in Ceylon, we propose cultivating a large plantation in Mexico. From investigations made by careful experts, we have learned that the rubber tree will grow and flourish, and that a tree of average size will yield about twenty gallons of milk, which amount is equal to forty pounds of dried rubber, a very nice return. The syndicate which I

represent is composed of a number of wealthy men who are confident of a handsome return upon their investment. Our plantation, or plantations I should say, for we shall have a number of them, are in the southern part of Mexico, not very far from the Gulf. We have not begun work yet, but we shall immediately I get there, and before long we shall be well under way."

The Rubber Scare in England.

INCLUDED in the donations recently received by the Royal Botanic Society, says the *European Mail* (London) are some seeds of the Pará rubber tree, presented by Mr. Plowes, a fellow of the society. These led to some remarks by the secretary—Mr. Sowerby—at the last monthly meeting of the society. He mentioned that in the society's museum was a specimen of the first sample of gutta percha imported to Europe—viz.: in 1842—and it was shortly after that date that it was used to insulate the first submarine telegraph cables. Up to the present moment no substitute has been found to take its place. From some interesting papers lately published he gleaned that from the "wholesale cutting down of adult trees" and the "reckless clearing and burning of the forests" the trees furnishing the most valuable kinds of gutta percha had become exceedingly scarce, and in most localities utterly extirpated. This was also rapidly becoming the case with the trees which supply the many varieties of India rubber; and, sooner or later, all natural vegetable products used by man must be artificially cultivated, as the natural supply never kept pace with the artificial demand. Some few attempts have been made to cultivate India rubber, but as yet not very successfully.

A Sticker.

A MINER named Tobias in our camp had been suffering with wandering rheumatic pains for several weeks, and the most of them finally got together between his shoulders and hung there, says a Western paper. He tried one thing and another until our brief list of remedies was exhausted, and then a brilliant idea struck him. He gathered some pitch off an old stub, added some rubber cement, and melted it up for a plaster. He took a piece of stout canvas a foot square, covered it over with the mixture and then had one of the boys clap it on his back. The results were all he could have hoped for. In four or five days the pains left him, but a day or two later the plaster began itching so vigorously that he had to stop and rub his back on a stone every ten or fifteen minutes.

The boys were finally appealed to to rid Tobias of his tormentor, but we investigated to discover that the only way to get it off was to skin him. It seemed to have grown into his flesh, and the slightest pull at it made him yell with the hurt. We tried soaking, and greasing and reheating, but it was no go. And the more we fooled with it the more it itched. We had a heap of fun at the poor man's expense, for by and by he had to get up nights to go and rub on his favorite boulder. By and by he declared that it must come off, happen what would. He wouldn't let one of us touch it, but planned a way of his own. He had one of the boys cut a hole in the margin of the cloth at the top and run a small rope through it.

The other end was made fast to a stone weighing about 100 pounds. When all was ready Tobias took his stand on the brink of a gulch thirty feet deep, shut his eyes and teeth, grabbed a stake with both hands, and gave the word to push the stone over. When the rope straightened Tobias uttered a yell which was heard a mile, and five seconds later let go of the

stake and went head over heels down into the gulch. We climbed down as soon as possible, but it was no use. The fall had broken his neck. When we turned him over to see about the plaster it was there in the same old spot. The weight of that stone hadn't even started it loose at the top.

British Capital Leaving the Amazon.

THE Amazon Steam Navigation Co., an English corporation long in the control of the shipping industry on the Amazon River, is reported in private dispatches from Pará to have sold out its entire plant, including 100 steamers, and all the wharves, landings and warehouses, to the Brazilian corporation, the Empresa de Obras Publicas, for £850,000. A payment of £100,000 was made, and the British company is said to have netted £350,000 by the transaction. The new company will have control of over 4000 miles of river navigation and will hold the monopoly of the great rubber carrying trade of the Amazon.

The English Bank of Rio is also reported to have sold out its Rio branch bank to a Brazilian company for £870,000. These two transactions are believed in some quarters to indicate a desire on the part of English capital to withdraw from South American enterprises.

Joke at a Scientist's Expense.

AN English scientist in looking over the newspapers noted among the receipts from Australia, a parcel of India rubber. It was a revelation to him, but as the home of the kangaroo is noted for surprises of every sort, he jumped to the conclusion that the inhabitants there had "struck" rubber, and were shipping it in a matter-of-fact way to the mother country. Not stopping to consider the impossibility of such a thing, he dove down into the stores, and after an endless amount of red tape found the package. It contained an old coat and some returned rubber tubing.

IN many cities, particularly those in the eastern part of this country, where the formation of the land is hilly, signs may be seen reading, "Please Uncheck Your Horses When Going Up Hill." If only the members of the society with the long name knew what rubber could do for the horses whose heads are checked up high, there would be no need for signs of this kind. It has long been known that check reins instead of being made entirely of leather, which is without elasticity and preserves an even irritating strain on the mouth, may easily be made partly of rubber, so that in reality the whole rein is but an elastic band fastened to the strap which connects the top of the horse's head with the hook in the saddle. Through the use of this arrangement a gentle and uniform pressure is kept upon the head and there is no straining of the muscles of the neck. The horse in going up hill can easily put his head down to the natural position, and when he reaches level ground the slight pull of the rubber check will give him the only hint that is necessary to hold his head up high again.

THE Portuguese claim to have found a substitute for gutta percha in Africa, which grows wild in Concan and is used there for hedges. It is insoluble in water, softens under heat and hardens in the cold. It can be moulded, sheeted, and is thought to be a twin of its rather expensive brother. Still, we remember some other substitutes for gutta percha and rubber, that have come and gone in the past. One in India was so

plenty in 1853 that the natives picked it as we do weeds, and made it into garments. Then it was supposed to be the coming gum, but in the "survival" race it somehow dropped behind, and yielded up the ghost to the genuine article. As a manufacturer said the other day, gold is gold, gutta percha is gutta percha, and substitutes don't count.

UNDER the direction of E. Bruce Preston, the J. M. W. Jones Co., of Chicago, have executed an illuminated hanger for the New Jersey Rubber Shoe Co. Major Preston, as might have been expected, gives prominence in the illustration to his constituents in the forests of the great Northwest, who wear the Jersey lumbermen's boot. Fully one-third of the sheet is occupied by a winter scene in the pineries. The picture is a spirited one. Men are rolling the newly felled timber down the snowy slopes; others are piling the logs, while others are driving horses and oxen engaged in drawing logs to the sawmill in the distance. The coloring is good and the middle perspective, showing the winter quarters of the loggers is very effective. In marked contrast is the section of the hanger devoted to the lighter grades of the Jersey company's product. Here tropical verdure frames male and female figures in Spanish costumes in which the Jersey shoe is conspicuous. The third illustration represents a train stalled in a huge snow-drift. It is Major Preston's idea that the Jersey boot is bound to be instrumental in enabling the trainmen to overcome the snow-drift, and the conceit is neatly executed.

THE American Rubber Co. is placing on the market a New-market which has many qualifications that appeal to the good sense of the customer. The back of the coat, as is also the cape, is lined with an extra quality of silk specially imported from Lyons, and which is a waterproof in itself. The garment is belted and made in plaits and checks. The company is having a good sale of its "sensible overs," which are similar to the storm slipper. Tennis shoes are in good request. The company has closed down its mills for three weeks in order to make some desirable and extensive improvements, among which are four new boilers, and about three thousand square feet of floor, which will serve to enlarge the oilskin facilities. A new line of men's mackintoshes in elegant checks and solid colors, will soon be on the counters of the warerooms of the company.

THE new price list of the Boston Rubber Shoe Co. and the Bay State Rubber Co. was issued on April 2. The folder opens so that the whole sheet may be seen at a glance. At the head of the folder appears this line: "Subject to change without notice," but President Converse states elsewhere that there will be no change in 1891.

GUM ARABIC, which was once universally used, has become very scarce and dear, and a substitute for it is being made from starch, which is subjected under pressure and at a high temperature to the action of sulphurous acid. The product, after neutralization, is soluble and extremely adhesive.

FOREIGN publications are commenting upon a new product of considerable interest called mineral caoutchouc asphaltos. It is a black, very elastic material, made from tar during the refining process by sulphuric acid. When it is heated and reduced forty per cent., an ebony-like substance is gained. It is an excellent non-conductor, ranking high as an insulator,

Trade Notes.

THE Hodgman Rubber Co. is very busy at one factory with special orders. This sort of business does not flag.

—Three years ago the Mattson Rubber Co. suspended the manufacture of bands and turned its attention to the production of dress shields. Lately in fixing up some old matters and making alterations some of these old bands were found, and in perfect order; indeed they seemed to be as good as they ever were. They were stretched to eight times a normal length without breaking—a pretty good test for three-year old rubber. The shields were also tested out of curiosity and proved equal to the bands, the different form not allowing so much elasticity however. The company never see a breathing spell, orders always keeping ahead of production.

—A young man at Peak's Island, Me., lost his rubber overshoe in the road the other night, thereby bringing great good luck to his father. That gentleman, Mr. Charles Trefethen, lost a pocket-book last fall that contained \$1200 in notes and money, and all his search for it was unavailing. But while the son was hunting for his lost rubber he came upon the long-missing wallet, with all its contents intact.

—The excessive guarantees given by dealers in fire-hose has lately taken a serious turn. An excessive pressure is 150 pounds and is sufficient for all emergencies, but manufacturers, in their zeal to sell goods, have been lately guaranteeing 500 pounds. Naturally the hose is taken, but never tested to that extent, and such transactions are looked upon as buncombe by those acquainted with the subject. One man, who was after his pound of flesh, went to work the other day to put the full pressure on a recent purchase. The result was astonishing. In one length there was not enough left to hold a wake over; another in form looked like an elongated nail keg, and others were twisted into all sorts of peculiar shapes. It was an expensive experiment for the dealer who made the guarantee, as the loss is a total one. Such guarantees are useless to both buyer and seller.

—There is rumor of the Colchester Rubber Co. coming to New London, so says a vivacious Connecticut newspaper.

—A statistician has figured out what it cost the city of Haverhill, Mass., this season for rubbers. There are 20,000 persons—men, women and children—who wear rubbers and they buy an average of three pairs or 60,000 pairs at an average price of at least half a dollar per pair, or \$30,000.

—European papers are speaking highly of a celluloid syringe from which much is predicted. In this country some months ago a celluloid syringe was brought out, and immense quantities were sold. Salesmen thought they had found the article that would put them in favor at home and make hosts of friends at every point on the road. But the thing warped and the road was strewn with anathemas instead. A person in authority who had more business in him than conscience shipped all that was left—something like a cargo—to England and the continent, and the new fad across the water will be watched with interest.

—A. D. Hawkins, of the Metropolitan Rubber Co., has lately finished a trade-mark and bill-head for Howard Place, who has established a store for yachting and rubber goods, outfits, etc. The mark consists of a life-buoy, with a pair of oars crossed in it, the whole surmounted with a triangular flag, the colors of the house. A part of the lettering in the heading is in a rope design, the words being composed of letters formed from twisted lengths of that article with frayed edges for shading. Another is a pen work sketch showing the efforts of a hilarious midnight stroller to reach his door in a rain storm under a burst

water spout. In this case a sober forethought has provided the maudlin individual with a mackintosh, and his broad grin and hiccoughy expression tell the rest of the story. The picture is a study, and will lead many a person of unsteady habits to buy a mackintosh.

—The cultivation of the rubber tree in hot-houses, stores and residences is carried on quite extensively in New York and other cities. An up-town druggist has no less than six of these plants, one of them measuring thirteen feet in height. At this season it is just shooting out its leaves which it does in the way similar to vines. The plant is estimated to have cost its owner so far \$250. Out of a dozen plants three will live, and the care is unremitting. There is a tree in the Botanical gardens in Philadelphia which is 78 feet high. It was imported for exhibition at the Centennial. In Madison Square Garden there is a large tree lately imported from Brazil. Small plants are sold by Harlem florists at a small cost, but, as the plant grows, it becomes expensive in the way of potting, training, etc.

—It is said that rubber compounds boiled and partially vulcanized in asphaltum receive a degree of toughness that is to be accomplished in almost no other way.

—At the present time when the wringer business has taken the form of a trust and people begin to realize that the rubber rolls amount in manufacture to nearly half a million dollars worth of business a year, it is interesting to remember that Nathaniel Hayward sold the patent years ago for the insignificant sum of \$5000.

—Speaking of the use of rubber gloves in electrical work, particularly by linemen, an expert says: "It is almost impossible to get the men to wear the gloves continuously, even in the most exposed positions. They get used to their work, and willingly take risks that the companies do not wish them to take; hence when they accidentally take hold of a live wire, the results are apt to be fatal."

—The Mutual Relief Association at the works of the Brown & Sharpe Co., in Providence, R. I., has proved a striking success. All of the hands whose pay averages over \$8 per week pay into a common pool five cents a week; and all of those whose weekly stipend is less than this pay two and one-half cents a week. From these little sums a number of thousand dollars have already been paid out in weekly benefits to sick and disabled workmen.

—At a meeting of the merchants and manufacturers, held at the Board of Trade rooms quite recently for the organization of a trades guild, whose object will be to arouse interest in the trade of Philadelphia among the business men elsewhere, Daniel S. Sutter, a rubber manufacturer, presided, and there was a large attendance of representative business men.

—The English company formed to explore Liberia, for the purpose of obtaining rubber from that country is in a state of ebullition. A great deal of money has disappeared in a way that seems to set some of the stockholders thinking whether there is not something peculiar in African methods. The Liberian Government took \$100,000, and \$350,000 was paid somehow for a concession which the stockholders are inclined to believe did not exist. After spending this \$450,000, the promoter, who was a trader on the West Coast, charged \$2500 for his services, which was the straw that broke the camel's back. Now all hands threaten to take the matter into the courts, which perhaps is a good way to squander what little money there is left.

—Some Boston men have been prospecting with a view to locating a rubber factory in the South, and Chattanooga has been named as the point selected.

—Messrs. Norman W. Henley & Co., 150 Nassau Street, New York, have just issued a book of 125 pages with 27 illustrations entitled "Rubber Hand Stamps and the Manipulation of Rubber," by T. O'Connor Sloane, E. M., A. M., Ph. D. Price, \$1.00. In the prospectus issued with this work, the publishers says: "The manipulation of India rubber has hitherto been considered an almost impenetrable trade secret, or at best a branch attended with much difficulty of manipulation. In 'Rubber Hand Stamps and the Manipulation of India Rubber' the entire subject is treated exclusively from a practical standpoint. The details are made so clear and the processes are so simplified that any one of fair mechanical ability can undertake to make numberless articles of the gum. While the most advanced apparatus is described and illustrated, at the same time the fact is recognized that many will not feel inclined to incur heavy expenditure. For such home-made apparatus, presses and vulcanizers are described and illustrated which will do perfectly efficient work, and whose cost will be almost nothing."

—The Calumet Rubber Co., Chicago, has just removed from No. 67 Washington Street to a very handsome new building at the northwest corner of Madison and Market Streets. Mr. W. T. Rawling, who is very popular with the trade and the travelling men, is the manager of the company. He has had an extensive experience with sundries business, first with Good-year Rubber Co., of Chicago, then with Perry, Stearns & Co., and now enters business for himself. We once had the pleasure of a call from him when he was acting as agent for the Ideal Rubber Co. He is evidently a gentleman of energy and ability combined with an urbanity which well explains his popularity with the trade. We wish him every success in his new departure.

—The Boston Boot Co., which has a store in Boston as well as in New York, has placed on the market a line of goods with names after the principal cities in the country. The men's line has the following brands: St. Paul, Des Moines, Albany, Cincinnati, while the ladies appropriate Detroit, Duluth, Rochester, Baltimore, Louisville, Chicago, Pittsburgh and Boston. All styles are made. While the company is a manufacturer, it is also the agent for the Wales, Goodyear and Connecticut Rubber companies. Its store in New York is at 110 Duane Street and in Boston at 80 Lincoln. It is not an old company; it was incorporated in June of last year. A large line of goods is carried. Frederic G. Kimball is the general manager and H. J. Jaquith the president.

—The India Rubber Glove Co., New York, reports dull times although, in some lines, activity prevails. Tennis goods keep up remarkably well, but the off season now has its sway. Dullness reigns almost everywhere. This company, from the thoroughness of its connections, usually makes good sales long after others. The factory is yet running full. The company has for three years had on the market a life preserver, which need not be removed day or night. It has shoulder straps which hold it on the person, and can be readily inflated. It is in much request by yachting people, steamer voyagers, etc. It is made up in good taste in small checks, and for the timid of either sex is an idea which is appreciated as evidenced by the fact of its large sales.

—The Standard Paint Co., No. 75 Maiden Lane, through Mr. Paul Shainwald, its president, are now putting on the market a new substitute for rubber called Rubberoid. This gum has the appearance of Pará and absorbs considerable compound and it is not affected by extremes of temperature. Manufacturers who have experimented with it regard it as a valuable substitute, and there is no doubt that for certain classes of compounds it will meet with a ready sale.

—The Peerless Rubber Co., New York, has lately sold to the Brooklyn Fire Department forty-eight lengths of four-inch suction hose. They also have sold a lot of four-inch suction hose, steel-clad, for the Standard Oil Co., which is to be used in pumping oil into vessels. A new lithographers' cloth has lately been gotten out by this company. It consists of a sheet with the cloth on one side, the usual way hitherto being to insert the cloth, which made it bulky. A sheet made altogether of rubber compound would, of course, be the better; but it is not durable; but with cloth on one side it will last six months. The company is full of business and running its factory until twelve o'clock at night.

—The Hodgman Rubber Co. has taken the time in this dull season to make a few improvements, and the smell of turpentine and fresh paint pervades the Broadway store. Some mammoth show windows have been put in on the Broadway side, measuring eight feet in depth. Elegant brass signs skirt the foot of the window-frames outside. Electric lights have been rearranged, and the handsome Corinthian columns which go the length of the store have been bronzed. The company is having good success in disposing of its collapsible wash-basins and bath-tubs, eight inches being the bulk of one, and twelve, sixteen and twenty-five inches being the respective sizes of the tubs. The new sleeveless mackintoshes with long capes for warm weather, called the Monmouth for men and the Claremont for women, are selling well for the approaching outing season.

—The Toledo Rubber Co., jobbers and dealers in rubber goods of every description, have been attracting public attention by the exhibition in the show window of their well-appointed store at 237 Summit Street, of two miniature working steam engines which the papers of that city say are "beauties." One of these is a minute Corliss engine, perfect in all its parts; the other is an upright engine, rivalling in beauty of finish and poetry of motion the one with the more distinguished cognomen. Messrs. E. C. Deardoff, president, and T. H. Deardoff, secretary and treasurer of the company, have made this the leading house in the trade between Cleveland and Chicago. The company deals only in high-class goods, of which their lists are very extensive. The flattering notices given by the Toledo papers to each of the Messrs. Deardoff evince their great popularity in the business community of that busy Western city.

—The Fairfield Rubber Co. now have their New York office at No. 110 Worth Street under the management of Major W. W. Harral.

—F. W. Stephenson, representing the Clifton Rubber Co., recently left for an extended trip through California and the far West, and expects to be gone some three months.

—Taft Bros., New York, dealers in India rubber and gutta percha have removed to No. 5 Gold Street.

—Charles Loewenthal, of New York, is at present in England without definite plans, but it is expected that he will visit the Continent shortly.

—Mr. Geo. H. Meeker, for the New York Insulated Wire Co., has leased the stores No. 78, 80, 82 Franklin Street, Chicago, and with a corps of competent assistants will handle their celebrated Grimshaw White Core and B. D. wires, tapes and compounds, Vulca Interior Wire Ducts and the G. H. M. hard and soft rubber Tubing. This departure has been made necessary by the constantly increasing demand for their goods throughout the West. With Mr. Meeker's large acquaintance and unequalled energy this move is an assured success. He cordially invites his friends to call upon him, remarking that "rubber-covered wire is still in the rubber business."

—A. K. Drexel will in a few days begin business at 605 Penn Street, Reading, Pa. He will handle rubber and leather goods.

—The Columbia Rubber Works Company, Akron, Ohio, has filed a certificate of increase of capital stock from \$100,000 to \$200,000.

—Thomas Cook Wordin, who has been secretary and treasurer of the Fairfield, Conn., Rubber Company, has a position in a private banking house in New York, but continues to maintain a residence in Bridgeport. Fred. M. Goodell of Bridgeport is for the present at Mr. Wordin's desk.

—An adjourned meeting of the stockholders of the Pará Rubber Company was held at Boston, May 4. A proposition of \$40 a share for the stock of the company was submitted to the meeting and action was deferred one week. The committee appointed to investigate the manner of conducting the business of the company reported that the methods pursued were the same as are generally employed in all rubber companies. The business was new to the committee, and it did not feel qualified to express an opinion as to whether improved methods could be introduced. A part of the works of the company at South Framingham, Mass., have been started up, after having been idle since April 9. The rest of the factory will soon be in operation.

—The factories of the Boston Rubber Shoe Company, situated at the Fells and Edgeworth, Malden, Mass., which employ more than 2000 persons, shut down April 30 for two weeks. It is stated that both factories have a large number of orders on hand and will run all summer and fall without another shut down.

—Mr. William Robinson of Campello, Mass., well known in the rubber trade, and wife, will sail for England on the 16th inst., on account of the health of the latter. Mr. Robinson has been offered two positions in rubber factories on the other side, but we understand that he will accept neither of them. They expect to be gone six months or a year. Our best wishes go with them.

—Mr. H. B. Chamberlain, of the Atlas Chemical Co., called at our office a few days ago and, in reply to a query from us, stated that his company is not yet prepared to furnish rubber manufacturers with other chemicals than antimony for the reason that they have all they can do to furnish that. An enlargement of their plant is under consideration, and this is no doubt intended to give them facilities for carrying out their former plans.

—Some of the office men of the Jenkins Valve Co., inspired by T. G. Oakes and S. S. Larremore, recently presented Mr. A. B. Jenkins with two pieces of desk furniture which are unique to say the least. One is a smoker's set, composed of a $\frac{3}{4}$ -inch horizontal check valve as a match safe, a $\frac{1}{2}$ -inch horizontal check valve as an ash receiver, and a $\frac{1}{4}$ -inch check valve for a cigar holder, all encased in brass. The set is beautifully finished in nickel, oxidized silver and bronze. The other piece is an inkstand composed of two $\frac{3}{4}$ -inch Jenkins brass globe-valves standing on a brass base. All are in good taste and exhibit uses for these highly popular valves not contemplated by the inventor.

—The New Brunswick Rubber Co. is meeting with large sales of red soled tennis shoes, their orders for these goods being far in advance of expectations, there being a telegraphic demand for them. The factory is busy on orders exclusively.

—F. G. Miller, of Galveston, Texas, was in the city the other day, making a few purchases for the people in the lone Star State.

—The Metropolitan Rubber Co. is paying much attention to the manufacture of tubing, some of which is only $\frac{1}{4}$ -inch diam-

eter. This size, and that of $\frac{1}{2}$ -inch are used in electric bells, which latter every member of the body politic has made up his mind that he needs and must have. The tubing protects the wire from a rubbing contact with the metal box, which, if it were not protected, would be fatal to insulation. This tubing is made by a machine which deposits the soft rubber on the dies, and as it has to be done very evenly, and there is so much pressure, nothing but the best gum can be used. An order was given to them the other day which it was calculated would form line from New York City away up into Connecticut. This tubing is used for a great many other purposes. Hard rubber tubing is also in good demand. Linen hose is being imported by this company in considerable quantities. Mr. G. M. Ayres, who has charge of this department in conjunction with Mr. A. D. Hawkins, is keeping things moving, and the factory, much to the disgust of some of his customers, cannot keep up with him.

—"I would not be without one of Kohlbusch's scales," said a rubber manufacturer a few days ago. "A man was just in here and wanted a price for a thousand pieces of rubber, that weighed a minute portion of an ounce. I could not have told how much they would have weighed if I had not the scale at my elbow." Kohlbusch is only sorry that there is not another rubber trade to work up.

—Mr. Joseph O. Kerbey, late U. S. Consul at Pará, has lately published an explanation of his differences with Mr. Clayton, the former Consul.

—Baron du Gondoriz was expected to leave Pará last week for New York City. At this moment his movements are an important factor in the rubber trade, although the purport of his visit is not stated.

—The spiral hose protector of the Metropolitan Rubber Co. is proving an excellent thing, the guard being placed on the portion where the strain naturally comes. Almost any one can see the advantages of this position, but A. D. Hawkins is afraid he will strike some dullard, and has pictured a human hand that has become battered by not using it. The hand has the general appearance of being tired, the muscles standing out in bold relief. It also has a look as though it had been dealing with the "Mafia" with little success. The first and fourth fingers are threatening to secede, the middle fingers have both spavin and ring-bone, and the thumb is playing a game of wiggle wag. A druggist has plastered it with court-plaster in a vain attempt to outline some Maltese crosses. If one wishes to see the picture of a wrecked hand hardly able to hold a pair of deuces send an order for a dozen protectors and look upon what is possible with old methods.

—The new quarters of the Hall Rubber Company, at 522-526 Congress Street, Portland, Me., opened April 20. A number of special bargains were shown in honor of the event. The new store possesses all the attractions possible, being light, airy and clean, and the goods are attractively displayed.

—The Secretary of State on the 25th of April issued a license to the Chicago Rubber and Mill Supply Company to deal in rubber goods and mill supplies; capital stock, \$20,000; incorporators, Frank C. Vierling, Charles H. Thompson and Charles E. Pope.

—The Derby Rubber Company, Bridgeport, Conn., are fast bringing their improvements to completion and will probably be ready to run when the water is up in the canal.

—The Toledo Cot and Wringer Company is moving into a new factory building at Auburndale.

—The connection to the boiler at Brook, Oliphant & Company's rubber mill at Trenton, N. J., blew out on the morning of April 29, in consequence of which the mill had to shut down.

—The Chicago Rubber Works have of late largely increased their plant. Among other new machines they have added a Wheeler & Tappan fire pump, new boilers and furnaces. They are very busy, running both night and day forces.

—The works of the Riverside Plastic Company, at Paterson, N. J., were lately entirely destroyed by fire, which originated in some unknown manner. The concern, which manufactured brush backs, toilet articles and poker checks, etc., by a process of its own, from a material somewhat like celluloid, gave employment to about thirty-five hands and was very busy, having just received an order for 100,000 brush backs.

—I. C. Beatty, manufacturer of elastic webbing at Camden, N. J., is considering a proposition to remove his plant to Pittsfield, Mass.

—The Omaha Rubber and the Nebraska Rubber Companies have consolidated their wholesale and retail stores and moved the entire stock in the store lately occupied by Heyman & Deiches, Nos. 1518 and 1520 Farnam St., where they now have one of the most complete rubber stores in the West.

—Probably the largest pair of rubber boots for actual wear ever manufactured has just been turned out by the Lambertville Rubber Company. One of the company's salesmen now traveling in the West sent in a special order for a pair of hip boots, the length of measurement of which caused a shade of doubt to pass over the countenances of all who saw the order. The boots were made only after the order had been verified. The boots measure forty-four inches from the top to the heel.

—A clothes wringer that is said to be producing a handsome income for the present owner of the patent was invented in 1888 by Ellen Eglin, a Washington colored woman, who sold it for \$18 to a patent agent who knew how to wring a close bargain.

—The Tyer Rubber Company's office at Andover was broken into recently, entrance being gained through a window. The only booty obtained was about ten dollars in money, and five dollars' worth of postage stamps, which were in a drawer in a desk.

—At a fire at the Stoughton Rubber Co.'s plant early in April, the Grinnell sprinkler did very effective work, extinguishing the flames before the local fire department reached the spot.

—Fires in gossamer rubber factories are always dreaded, and invariably carefully guarded against. At the same time nearly all of them suffer sooner or later in this way. The last sufferer chronicled is the Gossamer Rubber Co., of South Framingham, Mass., whose handsome brick buildings were partly destroyed by a fire occurring April 16. The loss to the company is fortunately small, amounting to about \$2000.

—The works of the Woonsocket Rubber Co., at Milville, Mass., have been started up again after a two weeks' shut down. It is said that the new ticket will call for 9000 pairs of boots daily.

—The Boston *Advertiser* chronicles the fact that the rubber trade are likely to adopt uniform measurements for rubber boots and shoes.

—The directors of the Celluloid Co., who bought out the Zylonite Co., of North Adams, Mass., have selected what machinery they can use from the purchased plant, and offer the rest for sale.

—At the annual meeting of the Woonsocket Rubber Co., held April 20, the old board of directors were re-elected.

—The German firm of Richter & Son has been warned to discontinue manufacturing India rubber blocks bearing the Kaiser's portrait for use in public schools, as the imperial effigy is often profaned by injudicious manipulation on the part of the boys.

—Among the swell set in London, sparring matches, after dinner parties are all the rage. One was held in the ball-room of the Earl of Caledon recently, where six competitors put up their dukes in a ring formed with crimson silk ribbons. To prevent slipping on the polished floor, they wore American rubber soled tennis shoes.

—The factories of the Boston Rubber Shoe Co., at Edgeworth and the Fells shut down the last of April for two weeks. This is the invariable custom of the company each year as they utilize the time in thoroughly overhauling and repairing machinery and brushing up the whole plant for the work of the coming season. Both factories have large orders booked and will run all summer and fall without another shut down.

—The Fairfield Rubber Co., of Fairfield, Conn., have just added new machinery to their plant including new dry heaters and an additional boiler.

—The felting mills at Millville, which supply the Woonsocket Rubber Co. with felt, have started up on full time.

—Says the South Framingham *Gazette* "A representative of one of the large rubber goods manufacturing concerns was recently in town seeking to engage first-class rubber workers."

—A local paper speaks with pride of a large consignment of rubber balls to the Marlboro Rubber Co., of Marlboro, Mass.

—The Sagamore Rubber Co. is the name of a new company doing business in Fall River, Mass. The officers are Marcus M. Hill, treasurer and Jos. S. Oliver, manager. As set forth in their circular their main business will be the making up of mackintoshes and fine garments to order. The company is located in Borden's Block, Room 1.

—The exports of caoutchouc fell off last year in Mexico nearly fifty per cent. Labor evidently is too costly in that country to compete with that of the equatorial regions.

—"Handy Rules for Whist" in smooth verse is published by a firm well known to the rubber trade in insurance lines. In getting out this vest pocket folder, that gives popular information, and only hints at advertising, Endicott and Macomber have made a hit.

—The Goodyear Rubber Company, Middletown, Conn., after having their works closed several weeks for repairs, have started their shop again.

—The Herbert & Rapp Co., Boston, Mass., in a circular dated May 1, notify the trade that they have advanced the price of goring, three cents per yard for such as has been selling at less than thirty cents in the five-inch width, and four cents for such as has been selling for thirty cents and more. This is equal to one cent per pair in congress shoes. Owing to the advance in rubber one manufacturer of goring claims to have lost \$100,000 in the past season.

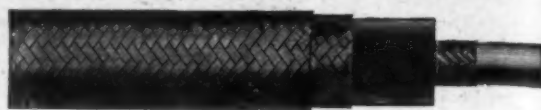
—Mr. G. M. Ayres, of the Metropolitan Rubber Co., New York, reports a sale lately made of 15 tons of packing.

—C. H. Minton, of the St. Paul Rubber Co., interviewed by a reporter in Superior, Wis., about the advisability of a new rubber plant in that place wisely says: "I doubt if it would be a successful venture, and I'll tell you Superior is too far removed from the raw material and the principal markets. In this respect St. Paul stands in the same light. The fabulous profits of the business is largely a myth."

—A manufacturer has placed upon the market India rubber shoes for dogs with tender or injured feet. They are made in three sizes. Dogs are oftener troubled with sore feet than is generally supposed. Especially is this so in winter, when the ground is frozen and the sharp projections cut into the paw.

—The executions and attachments issued against the Royal Rubber Comb Co., of New York, amounted to more than \$15,000. The sheriff's sale, however, realized less than \$3000.

The "CLARK" WIRE



INSULATION GUARANTEED WHEREVER USED, AERIAL, UNDERGROUND OR SUBMARINE.

In a letter from the Inspector of the Boston Fire Underwriters' Union, under date of March 29, 1886, he says:—

"A THOROUGHLY RELIABLE AND DESIRABLE WIRE IN EVERY RESPECT."

THE rubber used in insulating our wires and cables is especially chemically prepared, and is GUARANTEED TO BE WATERPROOF, and WILL NOT DETERIORATE, OXIDIZE OR CRACK, and will remain flexible in extreme cold weather, and is not affected by heat. The insulation is protected from mechanical injury by one or more braids, and the whole slicked with Clark's Patent Compound, which is water, oil, acid, and to a very great extent fire-proof. OUR INSULATION WILL PROVE DURABLE WHEN ALL OTHERS FAIL. We are prepared to furnish Single Wires of all gauges and diameter of Insulation for Telegraph and Electric Lights from stock. Cables made to order. We are now prepared to furnish our Clark Wire with a WHITE OUTSIDE FINISH for ceiling cleat work as well as our standard color.

CLARK JOINT GUM should be used for making water-proof joints. This is put up in half-pound boxes, in strips about one foot long and five-eighths inch wide, and when wrapped about a joints, and pressed firmly makes a solid mass.

FOR RAILWAY AND MOTOR use, we make all sizes of stranded and flexible cables with Clark insulation. Wire Tables and price list will be furnished on application to

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HERBERT H. EUSTIS, President and Electrician.

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Deposited in U. S. \$845,000.00.

POLICIES issued giving full protection to Employers against loss by claims from Employees on account of Accident. Rates proportioned to risks of occupation. One premium the only payment during year. No contingent or other liability on part of Employer. Employers with Pay Rolls of \$103,000,000 already covered in the United States. No employer should be without this Protection. Cases investigated by Competent Inspectors and considered by Eminent Counsel. If liability shown, claims settled without litigation.

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FOR HIGH PRESSURE.

Construction—Butted Jointed Longitudinal Seams, Triple Rivetted, Rivet Holes drilled in place.

CORRESPONDENCE SOLICITED.

Mention the India Rubber World when you write.

The Cincinnati Rubber Failure.

A. C. CATTELL, doing business as A. C. Cattell & Co., dealers in rubber goods at 150 West Fourth Street, have assigned to Orris P. Cobb. The assets are valued at \$6000, while the liabilities are placed by a conservative authority at not less than \$15,000. The following preferences were executed: Market National Bank, \$2000; Lucy A. Cattell, \$574; Brooks, Oliphant & Co., Trenton, N. J., \$363.57; Daniel & Covell Co., Philadelphia, \$104.40; B. F. Goodrich, Akron, O., \$39; Carleton & Kissam, New York, \$120; Tyer Rubber Goods Co., Andover, Mass., \$49.88; Seamless Rubber Co., New Haven, Conn., \$11.13.

Until three years ago the business was conducted at the same place as the J. F. Brooks Rubber Co. Mr. Orris P. Cobb, the assignee, is one of the most reputable attorneys at the local bar. His word for it that there is not a single trade bill due against the firm and that the business was in a most prosperous condition when Mr. Cattell received word within the last thirty days that his paper was on the market.

FROM A. C. CATTELL & CO.

CINCINNATI, April 30, 1891.

EDITOR INDIA RUBBER WORLD: I enclose you a few clippings from the Cincinnati papers commenting upon my assignment. While the papers speak disinterestedly upon the matter, they utterly fail to express the great calamity under which I am laboring. The news came upon me so unexpectedly that I had hardly time to cancel my trade obligations, and wired all work to be stopped upon goods ordered, and placed myself in such a position that I would be the only innocent sufferer in case I could not avert an assignment.

Mr. Brook had my entire confidence and when I purchased the business from him last June, I agreed to pay him one thousand dollars (\$1000) upon the execution of the contract, three thousand dollars (\$3000) within sixty days thereafter, and the balance amounting to seventeen thousand dollars (\$17,000) to be paid in notes made payable at four months, dates left blank, to the order of James F. Brook, he agreeing to protect same at maturity and the renewals thereof, until such times as it was convenient for me to retire them providing I retire at least two thousand dollars (\$2000) annually. I not only met my agreement but anticipated my payments and at his request I made the notes payable to A. C. Cattell & Co., and endorsed them and just previous to his disappearance he received and retained notes to the amount of two thousand dollars (\$2000) for renewals of notes which he had sent checks to cover which checks were protested and returned to my bank and honored by me.

I hope I have not tired you with these details but I am anxious that the trade shall understand that I assign with a good business, without owing a dollar and unable to locate paper that is being pressed for payment although not due until a distant future.

If you will give these facts as they are through your journal you will greatly oblige yours respectfully,

A. C. CATTELL.

The Para Rubber Shoe Co.'s Affairs.

THE general topic of conversation in the rubber trade is the recent meeting of the stockholders of the Pará Rubber Shoe Company. The following facts have been obtained relative to the present condition of the company. The loss during the past year was reported at \$80,000, which with that for the preceding year of \$197,521 makes a total depreciation of \$277,-

521. This amount is over one fourth of the original cash capital of the company, which was \$1,000,000. The valuation of the building and machinery was taken at that reported on the same a year ago. The machinery was then entered in the total assets of the company at \$307,260, and the building at \$191,939.

The stock of rubber on hand is about 200 tons. Half of this was valued at 80c. per lb. As this is very fine old rubber it would easily bring, if thrown upon the market, 62c. per lb. The remainder of this stock was valued at 50c. per lb. The total valuation of this stock can therefore be placed at \$260,000. The materials a year ago were entered at a cash valuation of \$431,905.

At the meeting of the stockholders, the resignation of A. L. Coolidge as president was entered, but was not accepted.

It was announced to prominent members of the trade that certain parties stand ready to take the stock of the Pará Rubber Shoe Company at \$40 a share. The par value of the stock is \$100, but it has sold as low as \$20. The confidence of these men in the ability of the company to compete successfully, and earn a profitable dividend is shown by this offer at this critical time.

Assignment of J. Francis Hayward.

AT the meeting of the creditors of J. Francis Hayward, wholesale dealer in rubber goods, belting, etc., at 160 Congress Street, with retail stores in Manchester, N. H., Providence, R. I., Lowell, Lawrence, Worcester and Fall River, Robert E. Evans, president of the American Rubber Company, acted as chairman. F. M. Shepard of the Goodyear Rubber Company and the Rubber Clothing Company of New York made a statement explanatory of the status of affairs. He said that the assignment had been made to George G. Bryant, one of Mr. Hayward's employes, because Mr. Hayward had at the time been unable to find any one else who would accept the assignment. He suggested that S. Lewis Gillette would be a suitable person to serve as assignee, and he thought that he would be satisfactory to all the creditors. As some legal questions would arise he thought it would be well to have a lawyer associated with Mr. Gillette as co-assignee, and he suggested that B. L. M. Tower would be a good person to serve in that capacity. The meeting accordingly voted that the property should be assigned to Mr. Gillette and Mr. Tower.

Mr. Hayward said his liabilities were upward of \$70,000, and the nominal assets about \$65,000, \$45,000 being of the assets of the wholesale store and \$20,000 those of the retail ones. The stock in the wholesale store aggregates about \$30,000, and the accounts of that store foot up about \$13,000.

After some further discussion it was voted that the assignees chosen at the meeting should make an investigation of the assets with a view to determining their value. Before the meeting adjourned, several of the creditors took occasion to express their good will to Mr. Hayward and to express the hope that he would have no difficulty in effecting an amicable adjustment and going on in business, which will no doubt be done.

In Assam, in the forests of Charduar, there is a plantation of rubber trees which comprises 1106 acres and contains 16,054 healthy plants, besides 84,000 seedlings. The plantation was started in 1873 by planting seedlings in the forks of trees. The runners had reached the ground in 1885, and then were transplanted in beds forty feet apart, being sheltered by the surrounding forest trees. The result has been acquired after these long years, and show that individual effort in this direction is almost useless. Nothing but Government efforts are reliable in the cultivation of caoutchouc trees.

The Rubber Market.

The past month has been one of small transactions in rubber. Sales of 10,000 and perhaps 15,000 pound lots have been made, but larger transactions have been impracticable.

The incident which has excited comment has been the selling by an Eastern manufacturer.

In this conjunction may be mentioned the fact that cables were received in Boston last month, which seemed to indicate that the Pará party was not meeting with the expected financial aid promised, but these cables were however not confirmed by mail advices from Pará of subsequent date. Soon after the selling commenced.

It is argued that the manufacturer had no motive in his sales except that he was a large holder of rubber, and his sales were simply usual ones of a party who was buying and selling all the time. They seemed to serve the only purpose of testing the market, and for the moment that result was important.

The market recovered from the effect of these sales at once.

Some export business was done early in the month, one large concern transferring a lot of rubber to supply its English factories, or otherwise.

Within a day or two large exports again have taken place, the manufacturer alluded to having exported 125,000 pounds fine Pará, and a good sized amount of coarse to England, for the purpose as he jocularly remarks, of placing it where it will do the most good.

The step now in progress is that the doughty Brazilian is on his way to New York, with the intimated purpose of taking measures to establish a large house in New York City, and also, as may be inferred, to direct the present deal from the vantage point of being on the ground. The situation is now reaching a point where one or the other of the parties must yield, or the manufacturers must one after the other close their mills. The syndicate is apparently very strong, but the manufacturers if they can unite, have this weapon in their power. The final clash is near at hand, and no outsider can predict the result.

Prices in New York have ranged from 87 cents to 90 cents for new fine Pará.

The arrivals during the month have been :

Justine, April 22 594,000 lbs.
Advance, April 24 67,000 lbs.
Cyril, May 6 718,000 lbs.

On passage is the *Basil* with 520 tons, 320 tons of which are for Europe; also the *Finance* with 30 tons on board. On passage to Europe are 205 tons, the cargo of two steamers.

The world's stocks of Pará rubber May 1 was 4458 tons, an increase of 322 tons for the month, and 2507 tons more than a year ago, of this amount there were in the United States 1427 tons, Europe 1476 tons, Pará 956 tons and afloat 600 tons. The bulk of the increase over a year ago is quite evenly distributed, the United States, however, carrying a good proportion of the increase, or about 1160 tons more than in May, 1890. Europe held 576 tons more, while there was an increase of about 1600 tons at Pará and on passage. The increase in stocks in New York amounted to about 450 tons for the month, the syndicate holding about 80 per cent. of the 2,500,000 pounds held here which is a fair ratio of their holdings in the stocks of the world.

Late cables from Pará report that very heavy rains are suspending work on the islands. The receipts have shown a decided falling off only 75 tons having been received up to the 12th. The receipts this month will probably be less than 600 tons and may not reach 500. Exchange after being down to

16½ rallied to 17¾d. Portuguese finances may be influencing exchange at the moment, without fair reason.

Prices have risen to 4300 milreis for up river with no islands practically in the market and with Vianna taking the receipts.

The receipts at Pará in April were 1050 tons against 840 tons during the same time last year.

The Liverpool and London markets have been quiet without material change in prices. A better feeling became prominent in Pará kinds at the end of the month, and a good business was done. An attempt during the month correspondent with that in America was made to break the market and prices dropped twopence, but a full recovery was made. Cables report the prices for fine Pará in London at 44d.

The head of a large house in England writes to a leading house in New York that "It would seem that stocks are coming more and more into one hand, and if an impetus comes from America, and the manufacturers there start to take large lines we over here are bound to do so also, and if the bulk of the 1500 tons held in New York is held in one hand, it would almost seem certain that there would not be receipts in other hands enough to supply consumers during the remainder of the month. I believe they will naturally be obliged to come to him, but naturally offers of small quantities will not be likely to tempt him."

There has been an active market for the better grades of centrals at the lowest prices of the season. Africans have been slow of sale.

Simpson & Beers report the money market firm, with the supply of paper exceeding the demand. The continued large exports of gold tend to restrict the buying of outside paper by New York City banks, while country banks are only moderate purchasers. Rates range from 6 to 7 per cent. for prime endorsed notes. The prospect is that there will be a steady money market at these figures until Midsummer. This firm also furnish the following statistical statement:

April 30, 1891.

Statistics of Pará Rubber.

Stocks of Pará here	March 31,	about	2,100,000 lbs.
Receipts	" April	"	1,923,000 "
Deliveries	" " April	"	923,000 "
Stock	" " April 30, 1891,	"	3,100,000 "
"	" " " " 1890,	"	750,000 "
"	" " " " 1889,	"	1,380,000 "

Prices for April.

	1891.		1890.		1889.	
	Fine.	Coarse.	Fine.	Coarse.	Fine.	Coarse.
First....	90	60	84	64	62	38½
Highest..	90	60	87	66	65	39½
Lowest..	87	57½	83	63	61½	37½
Last	89	59	87	66	65	39½

About 2,500,000 lbs. of the stock belong to the new Brazilian company, the Empresa Industrial, which is interested in higher prices.

The latest New York quotations are:

Para, fine, new.....	88-90	Sierra Leone.....	43-49
Para, fine, old.....	91-93	Benguela.....	52-53
Para, coarse, new.....	50-61	Congo Ball.....	47-48
Para, coarse, old.....	63	Small Ball.....	44-47
Caucho (Peruvian) strip.....	50-52	Soft Ball.....	34-35
Caucho (Peruvian) ball.....	58-60	Flake, Lump and Ord.....	28-33
Mangabeira, sheet.....	46	Mozambique, red ball.....	
Emerald, sausage.....	58-60	Mozambique, white ball.....	
Guayquil, strip.....	43-44	Madagascar, pinky.....	68-70
Virgin Serap.....		Madagascar, black.....	48-56
Carthagea, strip.....	35	Borneo.....	35-50
Nicaragua, scrap.....	53-55	Gutta percha, fine grade.....	140@150
Nicaragua, sheet.....	50-51	Gutta percha, medium.....	100
Guatemala, sheet.....	50	Gutta percha, hard white.....	100
Thimbles.....	48-50	Gutta percha, lower sorts.....	60-85
Tongues.....	40-43		

RUBBER BUYERS' DIRECTORY.

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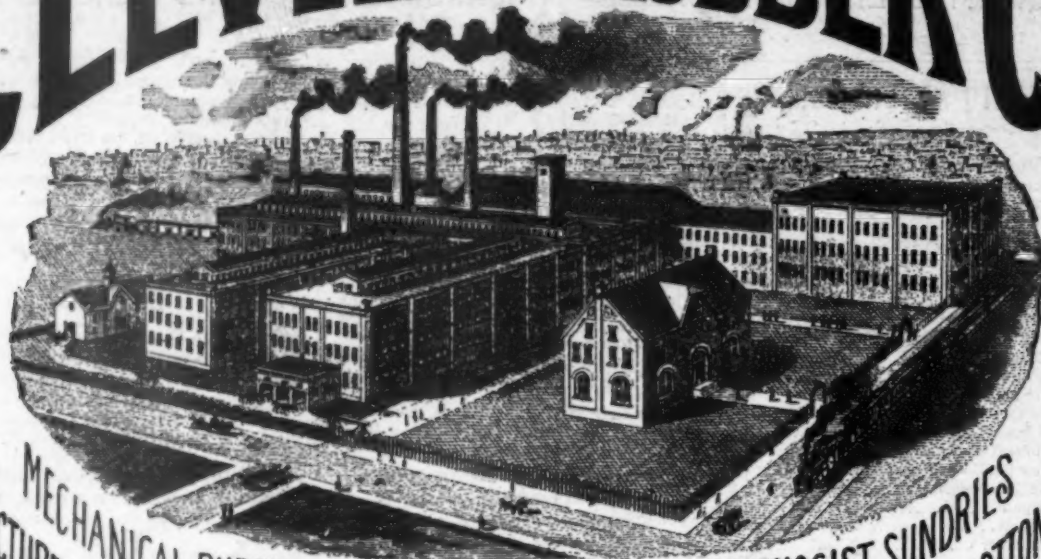
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